KINDER MORGAN

By Certified Mail, Return Receipt Requested

March 12, 2015

Mr. Charles A. Barnes
Enforcement Officer/Project Coordinator
U.S. EPA, Region 6
Technical Section (6EN-HE)
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Re: Agreed Order on Consent (AOC)
EPA Docket No. RCRA-VI-7003-01-01
El Paso Merchant Energy-Petroleum Company Elementis Site, Corpus Christi, TX
2014 AOC Annual Groundwater Monitoring Report

Dear Mr. Thrush:

El Paso Merchant Energy-Petroleum Company (El Paso) is pleased to submit three hard copies and one electronic copy (CD) of the 2014 AOC Annual Groundwater Monitoring Report for the Elementis Chromium, L.P. (Elementis) Site in Corpus Christi, TX. This report has been prepared in accordance with the ***Corrective Measures Study*** (CMS) submitted in February 2010.

If you have any questions or comments, please contact me at (713) 420-3414.

Sincerely,

David W. Zuvanich, P.G.
(Texas License No. 1537)
Project Manager
Kinder Morgan, Inc.

Enclosure

cc: C. Todd Counter, Corrective Action Section, TCEQ, Austin, TX
Joel Barnhart, American Chrome & Chemical L.P.
Vince Blout, Kinder Morgan, Inc. – w/o enclosure
File

CERTIFICATION

(AOC Provision VII.4.H, U.S. EPA Docket No. RCRA-VI-7003-01-01)

I certify that, to the best of my knowledge, the information contained in or accompanying this submission is true, accurate, and complete. I am aware that there are significant penalties for submitting false information under 18 U.S.C. Section 1001.

David W. Zuvanich, P.G.

03.12.2015

Date

PROFESSIONAL GEOSCIENTIST CERTIFICATION

2014 AOC Annual Groundwater Monitoring Report

El Paso Merchant Energy-Petroleum Company
Elementis Chromium, L.P. Site
Corpus Christi, Texas

March 2015

In accordance with the Texas Professional Geoscience Practice Act (Title 6, Texas Occupations Code, Chapter 1002; Senate Bill 405, 77th Legislature) and the Administrative Rules of the Texas Board of Professional Geoscientist (Title 22, Texas Administrative Code, Part 39, Chapter 850 and 851), the geoscientific information contained in the 2014 AOC Annual Groundwater Monitoring Report dated March 2015 for the Elementis Chromium, L.P. Site in Corpus Christi, Texas has been reviewed by a registered professional geoscientist.

This is to certify that the findings, specifications, and/or professional opinions presented in this report have been prepared in accordance with generally accepted professional geologic and hydrogeologic practice. I hereby certify that I have prepared and/or reviewed the information presented in the 2014 AOC Annual Groundwater Monitoring Report dated March 2015 and have found that the report is consistent with accepted geoscientific principles and practices.

STATE OF TEXAS
KEVIN PASTERNAK
GEOLOGY
2469
LICENSED
PROFESSIONAL GEOSCIENTIST

Signature Kevin Pasternak Date 3/11/15

Kevin Pasternak, P.G.
Texas LPG No. 2469
URS Corporation, a Nevada Corporation

2014 AOC Annual Groundwater Monitoring Report

El Paso Merchant Energy-Petroleum Company
Elementis Chromium, L.P. Site
Corpus Christi, Texas

March 2015

Prepared for:
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Table of Contents

Section **Page**

1.0 INTRODUCTION 1-1
- 1.1 Site Description 1-1
- 1.2 Regulatory Overview 1-2
  - 1.2.1 Agreed Final Judgment 1-2
  - 1.2.2 Administrative Order on Consent 1-2
- 1.3 Objectives of the AOC Area Groundwater Monitoring Program 1-3
- 1.4 Historical Investigations and Interim Measures 1-4
- 1.5 Organization of the Report 1-5

2.0 GROUNDWATER MONITORING ACTIVITIES 2-1
- 2.1 Fluid Level Measurements 2-1
- 2.2 Groundwater Sampling 2-2
- 2.3 Well Inspection and Redevelopment 2-3
- 2.4 Investigation-Derived Waste Management 2-4
- 2.5 Quality Assurance/Quality Control 2-4
- 2.6 Deviations from the Corrective Measures Study 2-4

3.0 NATURE AND EXTENT OF GROUNDWATER CONTAMINATION 3-1
- 3.1 Groundwater Gradient 3-1
  - 3.1.1 1st WBZ 3-1
  - 3.1.2 2nd WBZ 3-1
- 3.2 LNAPL Distribution and Dissolved Phase Benzene Results 3-1
  - 3.2.1 LNAPL Distribution in the 1st WBZ 3-2
  - 3.2.2 Dissolved Phase Benzene 3-2
    - 3.2.2.1 Dissolved Phase Benzene in the 1st WBZ 3-2
    - 3.2.2.2 Dissolved Phase Benzene in the 2nd WBZ 3-3

4.0 CONCLUSIONS AND RECOMMENDATIONS 4-1

5.0 REFERENCES 5-1

List of Tables

Table 1	Site Chronology
Table 2	Monitor Well Sampling Schedule for AOC Long-Term Groundwater Monitoring Program
Table 3	Fluid Level Measurements for April and October 2014 Sampling Events
Table 4	Groundwater Quality Parameters
Table 5	Vertical Gradients at Paired Wells
Table 6	Summary of Groundwater Benzene Analytical Results

List of Figures

Figure 1	Site Location Map
Figure 2	Facility Well Location Map
Figure 3	AOC Groundwater Sample Locations
Figure 4	Potentiometric Surface of the 1st WBZ (April 2014)
Figure 5	Potentiometric Surface of the 1st WBZ (October 2014)
Figure 6	Potentiometric Surface of the 2nd WBZ (April 2014)
Figure 7	Potentiometric Surface of the 2nd WBZ (October 2014)
Figure 8	Extent of LNAPL in 1st WBZ (April 2014)
Figure 9	Extent of LNAPL in 1st WBZ (October 2014)
Figure 10	Extent of Dissolved Phase Benzene in 2nd WBZ (April 2014)
Figure 11	Extent of Dissolved Phase Benzene in 2nd WBZ (October 2014)

List of Appendices

Appendix A	Data Usability Summaries and Laboratory Reports

Acronyms and Abbreviations

%	percent
°C	degrees Celsius
ACC	American Chrome and Chemicals L.P.
AFJ	Agreed Final Judgment
AOC	Administrative Order on Consent
APAR	Affected Property Assessment Report
AS	Air Sparging
bgs	below ground surface
BTOC	below top of casing
CAO	Corrective Action Objectives
CCIH	Corpus Christi Inner Harbor
CMS	Corrective Measures Study
Coastal	Coastal Refining & Marketing, Inc.
CPT	cone penetrometer testing
CSM	Conceptual Site Model
DiSorbo	DiSorbo Consulting LLC
DO	dissolved oxygen
DPT	direct push technology
DTB	depth to bottom
El Paso	El Paso Merchant Energy-Petroleum Company
Elementis	Elementis Chromium, L.P.
ENSR	ENSR Corporation
EPA	U.S. Environmental Protection Agency
FI	Facility Investigation
FRG	Final Remediation Goal
ft	foot, feet
ft/ft	feet per foot
GMP	Groundwater Monitoring Program
GW	Groundwater
ICA	Interim Corrective Action
ID	Identification
IDW	investigation-derived waste
IM	Interim Measures
Kinder Morgan	Kinder Morgan, Inc.
LCS	laboratory control sample
LNAPL	light non-aqueous phase liquid
MDL	Method detection limit
Magellan	Magellan Terminal
MPE	Multi-phase extraction
MS	matrix spike
MSD	matrix spike duplicate
msl	mean sea level
mg/L	milligram per liter
mL/min	milliliter per minute

Acronyms and Abbreviations (Continued)

mS/cm	millisiemen per centimeter
mV	millivolts
NA	Not applicable
ND	Not detected
NM	not measured
NS	not sampled
NTU	nephelometric turbidity unit
O&M	operation and maintenance
ORP	oxidation-reduction potential
OWS	oil/water separator
P&A	plugged and abandoned
PGA	Pipeline Gallery Area
PPE	personal protective equipment
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RDA	Residual Disposal Area
ROST	Rapid Optical Screening Tool
SAP	Sampling and Analysis Plan
SVE	soil vapor extraction
TCEQ	Texas Commission on Environmental Quality
URS	URS Corporation
USGS	United States Geological Survey
Valero	Valero Energy Corporation
VOC	volatile organic compound
WBZ	water bearing zone

1.0 INTRODUCTION

This report documents the results of groundwater monitoring activities conducted at the Elementis Chromium, L.P. (Elementis) property in accordance with the Long-term Monitoring Plan for the Administrative Order on Consent (AOC) Area, as recommended in the ***Corrective Measures Study*** (URS Corporation [URS], February 2010a) *(*hereafter referred to as the ***CMS)***, approved by the U.S. Environmental Protection Agency (EPA) on May 20, 2011.

In 2012, Kinder Morgan, Inc. (Kinder Morgan) acquired El Paso Merchant Energy-Petroleum Company (El Paso); however, all regulatory issues are currently still being handled under administrative orders made between El Paso and the State of Texas and the EPA. The activities described in this report were conducted by El Paso consistent with the Facility Investigation (FI) and ***CMS*** as required by the AOC between EPA Region 6 and Coastal Refining & Marketing, Inc. (Coastal) issued September 2002 (EPA, September 2002).

1.1 Site Description

The Elementis property (also referred to as the Facility) is located in an industrial area characterized by manufacturing and refining operations. The Elementis property consists of a manufacturing facility and associated undeveloped land located at 3800 Buddy Lawrence Drive in Corpus Christi, Nueces County, Texas (Figure 1). The property occupies approximately 425 acres located adjacent to and downgradient of the Valero Refinery (formerly the Coastal Refinery) and the Magellan Terminal (Magellan) to the southeast and to the south of the Corpus Christi Inner Harbor (CCIH) ship channel near the Avery Point Turning Basin. The Citgo Refinery is located adjacent to the Elementis Facility to the east.

The AOC Area encompasses the portion of Elementis property east of Cantwell Lane and is more specifically defined in the AOC as:

> *"…the area of contamination beyond the Coastal Refinery property boundary north, northeast and east of the Coastal Refinery East Plant-North and extending onto or under the portion of Elementis property located East of Cantwell Lane and to the Inner Harbor Ship Channel. The definition of Facility will be expanded to include areas west of Cantwell Lane in the IM Area (as defined below) should investigation indicate that contamination is contiguous extending west of Cantwell Lane in the IM Area. The Facility does not include any portion of the Inner Harbor Ship Channel and notwithstanding anything in this Order to the contrary, this Order does not require Respondent to fully delineate or to remediate contamination in the Inner Harbor Ship Channel."* (AOC, Section I)

The Interim Measures (IM) Area is defined in the AOC as:

> *"…that portion of the Facility within 350 feet landward of the mean high tide mark of the Inner Harbor Ship Channel as shown on the USGS Corpus Christi Quadrangle Map."* (AOC, Section I)

1.2 Regulatory Overview

Administrative orders between El Paso and the State of Texas and the EPA prescribe work required to identify, investigate, contain, and control migration of waste constituents within and adjacent to the Elementis property. Since the issuance of these orders, a significant amount of investigation and remediation has been performed. The following subsections summarize the two legal orders.

1.2.1 Agreed Final Judgment

El Paso became involved in environmental activities associated with Elementis upon the merger of El Paso and Coastal in 2001. At that time, Coastal had an existing Agreed Final Judgment (AFJ) that is currently regulated by the Texas Commission on Environmental Quality (TCEQ); several obligations of that order had already been implemented, including an Interim Corrective Action (ICA) System, which consists of recovery wells across the Facility. Upon merging with Coastal, El Paso became the respondent to the AFJ.

The AFJ was signed between the TCEQ and Coastal (now El Paso) in April 1998 (TCEQ, April 1998) and amended in September 2003 (TCEQ, September 2003). The AFJ obligated Coastal to remediate hydrocarbons under the Elementis site and under the refinery itself. The AFJ Area includes the Coastal Refinery (now Valero Refinery) and the Elementis site west of Cantwell Lane, consisting of mostly vacant land and former disposal areas for a distance of approximately 4,500 feet (ft) from Cantwell Lane to Navigation Boulevard. The AFJ Area is shown on Figure 1. In 2003, Valero Energy Corporation (Valero) purchased the former Coastal Refinery from El Paso. Responsibilities defined in the AFJ were delegated between the parties as follows:

- Valero will operate, maintain, and, when necessary, enhance their onsite groundwater monitoring system and the ICA Systems.
- El Paso will operate and maintain the offsite groundwater monitoring system and the ICA Systems located on the adjacent property owned by Elementis.

1.2.2 Administrative Order on Consent

In September 2002, El Paso and EPA Region 6 signed an AOC (EPA, September 2002). The AOC obligates El Paso to investigate and remediate hydrocarbon contamination on the Elementis property east of Cantwell Lane. Specifically, the AOC refers to two areas of concern, the Facility Area and the IM Area, which are shown on Figure 1. The separation of the AOC from the AFJ was documented in the ***Joint Supplement to the Agreed Final Order*** that was signed on January 23, 2003 (TCEQ, January 2003).

In the IM Area, a containment and recovery system was installed to mitigate the potential for discharge of hydrocarbons to the CCIH ship channel. This system includes a fully penetrating subsurface barrier wall, extraction wells, process piping, and a groundwater recovery unit. Recovered groundwater containing residual chromium contamination is sent to Elementis' groundwater treatment system, which lies east of Cantwell Lane.

A soil vapor extraction (SVE) system in the Facility Area for light non-aqueous phase liquid (LNAPL) removal was installed and began operation in February 2012.

1.3 Objectives of the AOC Area Groundwater Monitoring Program

The ***CMS***, which was submitted to the EPA Region 6 in February 2010 and approved in May 2011, recommended a groundwater monitoring program (GMP) for the AOC Area as a means to demonstrate that Corrective Action Objectives (CAO) are being met by the corrective measures implemented on the Facility. Because previous GMPs at the Facility evaluated specific actions but did not address other areas of the dissolved phase groundwater plumes in the 1st and 2nd water bearing zones (WBZs), the monitoring plan recommended in the ***CMS*** is an integration of all of the groundwater monitoring requirements for the AOC Area. The integrated monitoring plan recommended in the ***CMS*** supersedes the GMP presented in the ***AOC Interim Measures (IM) Implementation Work Plan Rev. 3*** (URS, November 2009) (hereafter referred to as the ***IM Work Plan***).

The objectives of the integrated AOC Area GMP are to demonstrate performance of the following five criteria:

1) Dissolved phase contamination above the final remediation goal (FRG) in the 1st WBZ is not entering the CCIH ship channel;

2) Dissolved phase contamination in the 1st WBZ is not migrating to areas where it will pose a risk to human health or the environment;

3) Dissolved phase contamination above the FRG in the 2nd WBZ is not entering the CCIH ship channel;

4) Dissolved phase contamination in the 2nd WBZ is not migrating to areas where it will pose a risk to human health or the environment; and

5) LNAPL is not entering the CCIH ship channel.

The AOC Area GMP was divided into two parts, Short-term and Long-term monitoring. The Short-term GMP combined the requirements of the ***IM Work Plan*** with the general monitoring requirements of the ***CMS*** listed above. The Short-term GMP was designed to begin in January 2010 and continue for a period of one year. This plan also included monitoring data from transducers placed in specific wells to assess hydraulic control of the IM Containment System, in accordance with the aforementioned ***IM Work Plan***. Periodic gauging events were also manually performed and the results were evaluated.

The Long-term GMP, which began in 2011, consists of sampling a defined set of 1st WBZ monitor wells on an annual basis and a defined set of 2nd WBZ wells on a semiannual basis. An objective of the Long-term GMP is also to evaluate conditions relative to the five performance criteria described above.

This report documents the completion of Long-term Groundwater Monitoring activities, including groundwater sampling, that were conducted in April and October 2014.

1.4 Historical Investigations and Interim Measures

Response actions conducted to date consist of those performed as part of the IM and those performed at the Elementis property under the ICA implementation. Activity in the current IM Area began in 1971, when Elementis installed a Cofferdam sheet pile barrier along the CCIH ship channel in an effort to prevent chromium and heavy hydrocarbon-containing water from entering surface water. Water was extracted from a sump installed in an open trench adjacent to the Cofferdam. Groundwater seeps were observed downgradient of the Cofferdam Area in the late 1980s. The Texas Water Commission (predecessor to TCEQ) issued an Agreed Order to Elementis requiring recovery and treatment of chromium-contaminated groundwater in 1988. This resulted in the construction of four additional interceptor trenches.

In 1995, the above-mentioned extraction system began recovering benzene product in addition to the heavier hydrocarbons and chromium contaminated groundwater. As a result, Elementis backfilled the Cofferdam trench in 1998 and constructed a Cofferdam Groundwater Recovery System. The Cofferdam Groundwater Recovery System consisted of a series of extraction wells and several interceptor trenches. The fluid from the extraction system was pumped to the groundwater recovery unit. The recovery unit consisted of an oil/water separator (OWS), holding tank for the recovered LNAPL, two air strippers for groundwater pretreatment, and a thermal oxidizer to destroy volatile organic compounds (VOCs) in the air stripper off-gas stream. The effluent or residual chromium-containing groundwater was then delivered to the Elementis-operated water treatment system.

Because of increased benzene concentrations entering the IM Area, the extraction network (which was not designed to handle high benzene concentrations) experienced intermittent operational problems between 1996 and 2002. Subsequently, additional extraction wells were installed east of the Cofferdam. Hydrocarbon sheens were observed in 2000 and 2004 at certain locations near the shoreline of the CCIH ship channel; and a free-phase hydrocarbon seep was observed in February 2007 in the vicinity of recovery well R4, located west of the IM Area. Two interceptor trenches were installed in 2007 to address the observed seep. These trenches are currently operating.

Other recovery systems have been installed at the Facility, some of which are currently operating. Six product-only recovery wells were installed in December 2006 (and operated from early 2007 to 2011) to supplement LNAPL extraction in the IM Area above the bluff, approximately 300 ft south of the shoreline. The existing groundwater recovery unit was upgraded in 2009 to handle the groundwater collected in the IM Containment System. In 2010, the IM Containment System was completed, consisting of a 900-ft long fully penetrating subsurface barrier wall, seven total fluids recovery wells, eight product recovery wells, and five trench systems in the IM Area. In October 2013, recovery wells (RW-4 and RW-5) were installed on the south side of the barrier wall to provide additional fluid recovery from the vicinity upgradient of well PZ-06, where relatively elevated dissolved phase benzene concentrations were observed in April 2012 and April 2013. In November 2014, one additional recovery well (RW-6) was installed on the west side of the IM Area, and is shown on Figure 2.

The groundwater recovery systems currently operate continuously, with El Paso operating and maintaining the hydrocarbon recovery system on the Elementis property.

In the EPA-approved ***LNAPL Removal System Upgrade Work Plan*** (URS, December 2009), SVE was proposed in a phased approach throughout the LNAPL plume as the method of removing the LNAPL to the limits prescribed in the AOC (Section 2). A total of 15 vapor extraction wells were installed in May 2011 for the initial phase (Phase 1A) and 25 additional vapor extraction wells were installed between August and October 2013 for the second phase (Phase 2A).

The chronology for response actions at the Elementis property is summarized in Table 1.

1.5 Organization of the Report

Following this introduction, this report is organized into the following sections:

- Section 2.0 – Groundwater Monitoring Activities
- Section 3.0 – Nature and Extent of Groundwater Contamination
- Section 4.0 – Conclusions and Recommendations
- Section 5.0 – References

2.0 GROUNDWATER MONITORING ACTIVITIES

This section describes activities performed during the two semiannual groundwater sampling events conducted in the AOC Area in 2014. The 2014 groundwater monitoring was conducted in accordance with the AOC Long-term GMP, as described in the ***CMS***.

Activities consisted of semiannual sampling of a defined set of 1st and 2nd WBZ monitor wells for laboratory analysis of benzene. In addition, synoptic water level surveys were conducted on a semiannual basis across the entire Facility and on a quarterly basis within the IM Area to assess the effectiveness of the IM Containment System. Wells selected for semiannual and annual sampling for the AOC Long-term GMP are listed in Table 2. A subset of the AOC wells that are located in the IM Area are also used as compliance wells to evaluate the IM, and are also identified in Table 2.

Field activities included:

- Measurement of fluid levels in on-site wells;
- Inspection of monitor well conditions;
- Redevelopment of recovery wells;
- Collection of groundwater samples;
- Management of investigation-derived waste (IDW); and
- Implementation of quality assurance (QA)/quality control (QC).

2.1 Fluid Level Measurements

Fluid levels in monitor wells, pumping wells, and piezometers were measured during the synoptic gauging events performed in April and October 2014. Fluid levels were measured in 181 wells in April and October 2014. Figure 2 shows the location of wells on the Elementis property included in the gauging events. SVE wells are shown but not all gauged during the April and October 2014 events.

Each synoptic gauging event was completed in a single day. Fluid levels were measured using an electronic interface probe capable of detecting LNAPL and groundwater with measurements to the nearest 0.01 ft. A summary of fluid level measurements for the April and October 2014 synoptic events is included in Table 3.

Measurements were made relative to the top of the innermost well casing, each of which has been professionally surveyed to provide data used to calculate groundwater elevations. In wells where LNAPL was detected, the groundwater elevation was corrected using a representative specific gravity value for the LNAPL. Specific gravities for LNAPL have been determined from samples collected from select wells, or if a specific gravity was not available for a given well with measureable LNAPL, a representative specific gravity from a nearby well was used based

on proximity to the well sampled. Groundwater elevations were used to develop potentiometric surfaces and evaluate groundwater flow directions in the 1st and 2nd WBZs.

Multiple interface probes were used during each gauging event: four probes dedicated to wells presumed to be heavily impacted with contamination and three probes dedicated to wells with low levels or no contamination to minimize potential cross contamination. Interface probes were decontaminated prior to and after each measurement by rinsing with a Liqui-Nox® detergent solution followed by a distilled water rinse. At the end of the day, the interface probes were decontaminated via the seven-step process described in the ***Facility Investigation/Corrective Measures Study Sampling and Analysis Plan*** (URS, April 2009) (hereafter referred to as the ***FI/CMS SAP***) which consisted of: 1) tap water rinse; 2) Liqui-Nox® detergent solution rinse; 3) tap water rinse; 4) isopropyl alcohol rinse; 5) tap water rinse; 6) distilled water rinse; and 7) air-drying.

2.2 Groundwater Sampling

In April and October 2014, groundwater samples were collected from designated monitor wells to characterize Facility-wide conditions in the 1st and 2nd WBZs. The locations of the monitor wells sampled are shown on Figure 3, and the sampling schedule is presented in Table 2. One groundwater resample was collected from well EMW-U3T in August 2014. The August resample was collected because the April 2014 EMW-U3T benzene sample result appeared to be inconsistent with historic concentrations reported in that well.

Wells were sampled primarily using low-flow (minimal drawdown) methodology. Samples were collected after field parameters stabilized, as described in the ***FI/CMS SAP***. Three monitor wells within the IM Area (OW-L08, EMW-L8T, and EMW-L9T) were sampled using submersible pumps after three well volumes of water were removed. Monitor well (OW-L15) was sampled during April 2014 with a Geotech® peristaltic pump using low-flow methodology and in October 2014 with a disposable polyethylene bailer after three well volumes of water were removed.

During low-flow purging, each well was purged with a maximum allowable drawdown of 0.3 ft and a pumping rate between 100 to 500 milliliters per minute (mL/min). Water quality parameters (temperature, specific conductivity, dissolved oxygen [DO], oxidation-reduction potential [ORP], pH, and turbidity) were measured using a Horiba U-52 multi-parameter instrument with a flow-through cell. Stabilization was achieved when three consecutive readings indicated that temperature was within ± 1 degree Celsius (°C), specific conductivity was within ± 5 percent (%), DO was within ± 10%, ORP was within ± 10 millivolts (mV), pH values were within ± 0.1 pH unit, and turbidity was within ± 10 nephelometric turbidity units (NTUs). For purging performed by handbailing, dedicated disposable polyethylene bailers were used. Samples were collected directly from the bailers using dedicated polyethylene adaptors.

For the wells set in the 1st WBZ, a Geotech® peristaltic pump was used for purging and sampling, and disposable silicone and polyethylene tubing was used to convey the groundwater to the surface. The pump intake or tubing inlet was set within the screened interval of the well. For the wells set in the 2nd WBZ, dedicated submersible pumps were used for purging and sampling, and disposable polyethylene tubing was used to convey the groundwater to the

surface. After sample collection, the dedicated submersible pumps were decontaminated by the seven-step process described above prior to being returned to storage. The pumps are stored in containers that are labeled to indicate for which well they are dedicated.

Five of the monitor wells sampled during the AOC monitoring events (EMW-U17T, OW-U37, OW-U42, OW-U43, and OW-L15) are also part of the AFJ GMP. Samples are collected from the four 1st WBZ wells (EMW-U17T, OW-U37, OW-U42, and OW-U43) using dedicated bladder pumps and polyethylene tubing. The pump intake within these wells is placed within the screened interval during purging and sampling. The 2nd WBZ well OW-L15 was sampled using a disposable polyethylene bailer or peristaltic pump due to a bent or shifted well casing which prevented the deployment of a submersible pump.

Water quality parameters measured during the April and October 2014 monitoring events are summarized in Table 4.

Samples were collected directly into laboratory-provided vials containing hydrochloric acid as a preservative, and then placed into ice-filled coolers to cool to a temperature at or below 4°C during storage and transport to the laboratory. The samples were transported under chain-of-custody to the TestAmerica Laboratories, Inc. in Corpus Christi, Texas. Samples were analyzed for benzene using EPA Method 8260B.

2.3 Well Inspection and Redevelopment

A video inspection of 20 IM Area wells/trenches was conducted in January 2014 to determine the general condition of the well casing and screen (or the vertical portion of the screen and casing for trenches) as well as the severity of sediments/mineral scaling present in each well/trench. Based on the well video inspection, it was determined that eight recovery wells and the vertical portion of trenches R4 and CD-Deep should be redeveloped. Redevelopment was conducted in March 2014. The steps performed for redevelopment included:

1) Mechanical removal of sediment and scale using a tight fitting brush and surge block for approximately 15 minutes per 10 ft of screen.

2) Removal of liquids/solids from well/trench using a vacuum truck and air lift pumping.

3) Chemical cleaning of well screens with granular sulfamic acid (NW-110), bioacid polymer (NW-310), and non-ionic surfactant (NW-400), per the manufacturer's instructions.

4) The acid solution was left in the well/trench for approximately 24 hours and then agitated with the bristle brush and surge block for an additional 15 minutes to dislodge remaining deposits to the extent possible.

5) A final cycle of swabbing and air-lift pumping was performed on each well/trench. Rehabilitation was complete after a minimum of three well volumes were removed and field water quality parameters had stabilized.

6) Screen and casing inspection with a down well video camera performed for visual assessment of sediment and scale removal post redevelopment.

2.4 Investigation-Derived Waste Management

Purge water generated by groundwater sampling, redevelopment and decontamination activities was managed by the on-site groundwater recovery unit. Used personal protective equipment (PPE) and sample tubing were placed in 25-gallon DAK-paks and placed in the hazardous waste storage area located near the recovery unit. The URS personnel who operate the groundwater recovery unit managed this waste in accordance with Resource Conservation and Recovery Act (RCRA) regulations.

2.5 Quality Assurance/Quality Control

Analytical QA/QC was conducted in accordance with Section 9.0, Quality Assurance Project Plan (QAPP), of the ***FI/CMS SAP***. The QA/QC data associated with the analysis of samples collected during groundwater monitoring events were reviewed by a URS chemist, including comparison of results of calibration samples, blank samples, laboratory control samples (LCSs), surrogates, internal standards, matrix spike (MS)/matrix spike duplicate (MSD) samples, and field duplicates to acceptance criteria. The results indicate that all of the data are acceptable and usable for characterizing groundwater concentrations. The Data Usability Summaries for the two events are included with the laboratory reports in Appendix A.

2.6 Deviations from the Corrective Measures Study

The groundwater sampling events were performed in accordance with the ***CMS***. The following deviations were made:

- Wells LPZ-33 and EMW-U31T are scheduled for annual groundwater sampling per the ***CMS***; however, measurable LNAPL was detected in each well during the April 2014 event and in EMW-U31T during the October 2014 event. Therefore, groundwater samples were not collected from wells LPZ-33 and EMW-U31T.

- Well MW-U32 is identified in the ***CMS*** for semiannual groundwater sampling. In early 2010, this well was converted into a recovery well to address chromium contamination by Elementis on the downgradient side of the barrier wall. Since this well is currently used as a recovery well, a groundwater sample was collected from nearby well PZ-05 in April 2014 to replace the planned April 2014 sample from well MW-U32.

- Wells EMW-U32T, EMW-U6T, PZ-06, and MW-U36 are not included in the ***CMS*** for semiannual groundwater sampling; however, these wells were sampled. The additional samples provide data that are used to evaluate the lateral extent of dissolved phase benzene in groundwater. EMW-U32T, EMW-U6T, and MW-U36 were added to the AFJ GMP at the request of TCEQ in a letter dated October 1, 2010.

- Well EMW-U3T was resampled in August 2014 because the April 2014 benzene result was inconsistent with historical concentrations detected in that well. Benzene was non-detect in the August 2014 resample.

3.0 NATURE AND EXTENT OF GROUNDWATER CONTAMINATION

The results of the AOC groundwater monitoring activities are discussed below. Fluid levels were evaluated to assess groundwater gradient and LNAPL distribution, and groundwater analytical results were evaluated to determine the areal extent of groundwater exceeding the benzene FRG (0.0708 milligrams per liter [mg/L]).

3.1 Groundwater Gradient

Results of the synoptic gauging events conducted in April and October 2014 are provided in Table 3. The measurements were used to calculate groundwater elevations and determine the groundwater gradients in the 1st and 2nd WBZs.

3.1.1 1st WBZ

In April and October 2014, groundwater in the 1st WBZ generally flowed in a northeasterly direction across the site with gradients ranging from 0.0025 to 0.0040 feet per foot (ft/ft) in April and 0.0023 to 0.0044 ft/ft in October 2014. The gradient is relatively flat in the southern and middle portions of the AOC Area and steepens near the IM Area closer to the CCIH. The IM Area is also where groundwater extraction is occurring. The 1st WBZ potentiometric surfaces for April and October 2014 are shown on Figures 4 and 5, respectively.

3.1.2 2nd WBZ

During April and October 2014, the hydraulic gradient in the 2nd WBZ was approximately 0.0020 ft/ft in April and 0.0017 ft/ft in October 2014, and flowed to the north and northeast from a groundwater high beneath the southwest Facility Area adjacent to the Valero Refinery on the west. Groundwater flow away from the influence of the localized groundwater high is generally to the north. The April and October 2014 potentiometric surfaces for the 2nd WBZ are shown on Figures 6 and 7, respectively.

The vertical hydraulic gradients were evaluated by comparing groundwater elevations at co-located 1st and 2nd WBZ wells where possible (such as paired wells EMW-L9T/EMW-U10T and EMW-U6T/EMW-L6T for example). Downward hydraulic gradients ranging from 0.0157 to 0.0275 ft/ft were observed at paired wells EMW-U28T/EMW-L38T and EMW-U41T/EMW-L41T in the eastern portion of the site during April and October 2014. Upward hydraulic gradients ranging from 0.0084 to 0.0341 ft/ft were observed at paired wells EMW-U25T/EMW-L37T in the southern portion of the site and at well pairs EMW-U6T/EMW-L6T and EMW-U10T/EMW-L9T in the IM Area during April and October 2014. Vertical gradients switched from downward in April to upward in October 2014 at well pair LPZ-13/EMW-L34T in the central portion of the site. A summary of the vertical hydraulic gradients is presented in Table 5.

3.2 LNAPL Distribution and Dissolved Phase Benzene Results

Samples were collected from 47 monitor wells during the April 2014 event and 27 monitor wells during the October 2014 event. An additional sample was collected from monitor well

EMW-U3T in August 2014. Groundwater samples were analyzed for benzene to assess dissolved phase conditions at the Facility. Table 6 summarizes the groundwater analytical data for samples collected in April and October 2014.

3.2.1 LNAPL Distribution in the 1st WBZ

As described in further detail in the ***Facility Investigation Report*** (URS, February 2010b) (hereafter referred to as the ***FI Report***), an LNAPL plume is present beneath the Facility. The plume originated at adjacent properties (Magellan and Valero Refinery) located south and southwest of the Elementis property. The LNAPL plume extends across the Facility from the southern property boundaries, having traveled in a north-northeast direction to the south bank of the CCIH ship channel. The LNAPL plume is intercepted by the IM Containment System (Figures 8 and 9).

Site geology controls the plume configuration throughout the southern and central part of the Facility. Typically, fine sand is present at the hydraulic surface, but surficial clay sometimes intersects the water table, forming a capillary barrier that prevents LNAPL migration in certain directions. LNAPL distribution is interpreted based on apparent thicknesses of LNAPL measured during synoptic gauging events.

LNAPL was detected in the 1st WBZ in both the April and October 2014 synoptic gauging events (Table 3). LNAPL was not detected in the 2nd WBZ. In April 2014, LNAPL was detected in 65 wells, with thicknesses ranging from 0.02 ft to 4.78 ft. In October 2014, LNAPL was detected in 63 wells, with thicknesses ranging from 0.11 ft to 4.67 ft. The maximum apparent thickness of LNAPL measured within the Facility was in well LPZ-05, which is located in the south central portion of the Facility. The distribution and thickness of LNAPL and the areal extent of the dissolved phase benzene plume in the 1st WBZ in April and October 2014 are illustrated on Figure 8 and Figure 9, respectively.

3.2.2 Dissolved Phase Benzene

A halo of dissolved phase benzene encompasses the LNAPL plume. The dissolved phase benzene plume extends beyond the extent of the LNAPL plume in the 1st WBZ. Dissolved phase benzene is also present in the 2nd WBZ. The extent of dissolved phase benzene is discussed below. While dissolved phase benzene in the 2nd WBZ does not encroach on the CCIH ship channel, the LNAPL and dissolved phase benzene plume in the 1st WBZ are present in the IM Area adjacent to the ship channel but are contained from further migration to the north by the IM Containment System. The containment system consists of a subsurface barrier wall that fully penetrates the 1st WBZ and a series of extraction wells and recovery trenches alongside the CCIH ship channel (see inset maps on Figure 8 and Figure 9).

3.2.2.1 Dissolved Phase Benzene in the 1st WBZ

Benzene concentrations were detected above the FRG (0.0708 mg/L) at seven wells during the April 2014 sampling event. Four of the wells are located within the facility area and include EMW-U40T (16.5 mg/L) along the southern boundary of the AOC Area, EMW-U17T (3.41 mg/L) located north of the Valero Refinery, and at EMW-U29T (148 mg/L) and OW-U43 (543 mg/L) located on the eastern part of the AOC Area. The other three benzene samples that

were above the FRG were from wells located in the IM Area and include MW-U31 (8.42 mg/L), PZ-06 (124 mg/L) and EMW-U3T (2.65 mg/L). For samples collected from the remaining monitor wells in April 2014, dissolved concentrations of benzene were non-detect or were detected below the FRG.

In August 2014, an additional groundwater benzene sample was collected from well EMW-U3T. This sampling event was not included in the AOC Long Term GMP but was performed to verify the April 2014 benzene result of 2.65 mg/L at well EMW-U3T because previous results from EMW-U3T had consistently been non-detect. The August 2014 EMW-U3T benzene result was non-detect.

During the October 2014 sampling event wells, EMW-U17T (3.15 mg/L) and OW-U43 (267 mg/L) had benzene detections above the FRG. Wells EMW-U40T and EMW-U29T were not sampled during the October 2014 event. In the IM Area, wells MW-U31 (3.4 mg/L), and PZ-06 (86.5 mg/L) were above the FRG and EMW-U3T was non-detect for benzene in October 2014. Samples collected from the remaining monitor wells in October 2014, had benzene concentrations that were non-detect or were detected below the FRG.

Table 6 summarizes the analytical results for the 2014 monitoring events and also shows the AOC semiannual monitoring results since 2011. Inclusion of the 2011 to 2013 past results is intended to provide a temporal reference for the 2014 results.

Several of the monitor wells in the AOC GMP are also sampled in October as part of the AFJ Semiannual GMP. Therefore, additional chemical data for select wells located on the Elementis Facility are provided in the AFJ Semiannual Groundwater Monitoring Report dated March 15, 2015 (DiSorbo Consulting LLC [DiSorbo], March 2014).

3.2.2.2 Dissolved Phase Benzene in the 2nd WBZ

Although a confining unit is present beneath the 1st WBZ on the Facility, dissolved phase benzene has also been detected in the 2nd WBZ. The confining unit between the 1st and 2nd WBZ appears to thin near the Valero Refinery.

During the April and October 2014 sampling events, groundwater from the 2nd WBZ exceeded the benzene FRG (0.0708 mg/L) at two wells. Well EMW-L36T (approximately 30 ft east of the Valero Refinery property boundary) had benzene concentrations of 860 mg/L in April and 873 mg/L in October 2014. In the middle of the Facility, well EMW-L34T (364 mg/L in April and 399 mg/L in October 2014) exceeded the FRG. Benzene concentrations in all other samples collected from the 2nd WBZ were either non-detect or less than the FRG.

Figures 10 and 11 illustrate the extent of dissolved phase benzene in the 2nd WBZ during April and October 2014, and the analytical data are summarized in Table 6.

The vertical profile of benzene in the 2nd WBZ is assessed with samples collected from wells EMW-L35B and EMW-L34T located in the center of the plume. EMW-L34T is screened at the top of the 2nd WBZ (48.5 to 58.5 ft below ground surface [bgs]) and EMW-L35B is screened at the bottom of the 2nd WBZ (screened 56.3 to 66.3 ft bgs). EMW-L34T samples exhibited benzene concentrations of 364 mg/L (April 2014) and 399 mg/L (October 2014), while the well

screened at the bottom of the 2nd WBZ had benzene concentrations of 0.00932 mg/L and 0.0212 mg/L respectively. Previously, well EMW-L35B had a benzene concentration of 5.88 mg/L in October 2013.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the AOC groundwater data collected during 2014, subsurface contamination in the 1st and 2nd WBZs at the Facility is, for the most part, consistent with previous observations. The results continue to validate pertinent elements of the Conceptual Site Model (CSM) described in the ***FI Report***, including:

- LNAPL is present in the 1st WBZ. Overall, apparent LNAPL thicknesses have decreased from the April 2014 event to the October 2014 event, but the areal extent of LNAPL for each event was similar to previous observations.

- Dissolved phase benzene contamination is present in the 1st WBZ. The lateral extent of benzene concentrations exceeding the FRG of 0.0708 mg/L (halo of dissolved phase contamination surrounding the LNAPL plume) was consistent during each of the events and similar to previous observations.

- Dissolved phase benzene contamination is present in the 2nd WBZ. The lateral extent of benzene concentrations exceeding the FRG of 0.0708 mg/L was similar to previous observations.

The objectives of the AOC Area GMP are to demonstrate performance of five criteria. These five criteria and how the results of the monitoring activities conducted in 2014 demonstrate performance are discussed below.

<u>Objective 1</u>: Dissolved phase contamination above the FRG in the 1st WBZ is not entering the CCIH ship channel. Fluid level measurements and analytical data collected in 2014 demonstrate that the IM Containment System is effectively inhibiting flow of groundwater containing dissolved phase benzene from entering the harbor. Benzene concentrations in groundwater samples collected from wells located hydraulically downgradient and crossgradient of the IM Containment System are below the FRG or not detected.

The dissolved phase benzene concentration in well PZ-06 is above the FRG and PZ-06 is located between the IM Containment System and the CCIH. An aquifer recovery and pumping test was performed in February 2013 and demonstrated that the IM Containment System has hydraulic control of the groundwater at PZ-06 and is preventing groundwater flow from PZ-06 to the CCIH (URS, March 2013). In October 2013, two additional groundwater recovery wells (RW-4 and RW-5) were installed upgradient of the barrier wall and the PZ-06 area to provide further hydraulic containment of dissolved phase benzene in groundwater. The dissolved phase benzene concentration reported in well PZ-06 has decreased from 522 mg/L in April 2013 to 124 mg/L and 86.5 mg/L in April and October 2014 respectively.

The dissolved phase benzene concentration in well MW-U31 is also above the FRG and MW-U31 is located between the IM Containment System and the CCIH. The dissolved phase benzene concentration in well MW-U31 has dropped

from 14.4 mg/L in January 2014 to 8.42 mg/L and 3.4 mg/L in April and October 2014, respectively.

<u>Objective 2</u>: Dissolved phase contamination in the 1st WBZ is not migrating to areas where it will pose a risk to human health or the environment. Analytical data from groundwater samples collected during 2014 show that dissolved phase extent in the 1st WBZ is not increasing and that benzene concentrations that are greater than the FRG are trending downward.

<u>Objective 3</u>: Dissolved phase contamination above the FRG in the 2nd WBZ is not entering the CCIH ship channel. Analytical data from groundwater samples collected during 2014 show that the dissolved phase contamination in the 2nd WBZ is not entering the CCIH (see Figures 10 and 11).

<u>Objective 4</u>: Dissolved phase contamination in the 2nd WBZ is not migrating to areas where it will pose a risk to human health or the environment. It appears that the extent of dissolved phase contamination in the 2nd WBZ is not increasing.

<u>Objective 5</u>: LNAPL is not entering the CCIH ship channel. Based on the fluid level measurements and LNAPL distribution, the IM Containment System is preventing LNAPL migration into the CCIH ship channel. In addition, the CCIH is inspected daily by URS and no evidence of LNAPL migration has been observed.

Based on the conclusions of the AOC Long-term Groundwater Monitoring, it is recommended to continue monitoring the 2nd WBZ wells on a semiannual basis during 2015. The 1st WBZ monitor wells will continue to be monitored for benzene concentrations on the semiannual or annual schedule according to the AOC Long-term GMP (Table 2) with the next event scheduled for April 2015. Monitor wells in the 2nd WBZ will be sampled and analyzed for benzene concentrations in April and October 2015. Site wide gauging events will be conducted again in April and October 2015.

Based on the continued presence of LNAPL and benzene concentrations detected in groundwater, it is recommended that additional remedial action alternatives be investigated in the AOC Area. Current additional remedial actions that are actively being considered include air sparging, SVE, and vacuum enhanced multiphase recovery.

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Tables

Table 1. Site Chronology

Date	Area Addressed		Description
	AOC(1)	AFJ(2)	
November 2014	X		Performed Indoor Air Monitoring at Bldgs. 1A, 1B, 4, 6, and 7.
November 2014	X		Installed new groundwater recovery well RW-6 and 4 new monitoring wells for a soil vapor extraction (SVE), air sparging (AS), and multi-phase extraction (MPE) pilot test.
October 2014	X	X	Performed a facility-wide synoptic gauging event and sampled 27 wells in the 1st and 2nd water bearing zones (WBZs) as part of the Administrative Order on Consent (AOC) Area Long-term Groundwater Monitoring Program (GMP).
September 2014		X	Submittal of "*Final Groundwater Monitoring Program, Semiannual Report, Reporting Period of January 1, 2014 - June 30, 2014"* to Texas Commission on Environmental Quality (TCEQ).
August 2014	X		Sampled well EMW-U3T in the 1st WBZ in the Interim Measures (IM) Area as additional sampling to the AOC Area Long-term GMP.
July 2014	X		Submittal of "*2014 1st Semiannual Indoor Air Monitoring Report*" to the U.S. Environmental Protection Agency (EPA).
May 2014	X		Performed Indoor Air Monitoring at Bldgs. 1A, 1B, 4, 6, and 7.
April 2014	X	X	Performed a facility-wide synoptic gauging event and sampled 47 wells in the 1st and 2nd WBZs as part of the AOC Area Long-term GMP.
March 2014a	X		Submittal of "*AOC Annual Groundwater Monitoring Report"* to EPA Region 6.
March 2014b	X		Performed down well video inspection at 20 IM Area wells and performed well redevelopment of 8 IM Area recovery wells.
February 2014	X		Submittal of "*2013 2nd Semiannual Indoor Air Monitoring Report*" to the EPA.
January 2014	X		Sampled 5 wells in the 1st WBZ in the IM Area as additional sampling to the AOC Arearea Long-term GMP.
November 2013	X		Performed Indoor Air Monitoring at Bldgs. 1A, 1B, 4, 6, and 7.
October 2013	X	X	Performed a facility-wide synoptic gauging event and sampled 31 wells in the 1st and 2nd WBZs as part of the AOC Area Long-term GMP. Installed two new groundwater recovery wells for inclusion in the IM Containment System. Installed three new groundwater recovery wells in the Residual Disposal Area (RDA), plugged, and abandoned (P&A) well T-11.
September 2013		X	Submittal of "*Final Groundwater Monitoring Program, Semiannual Report, Reporting Period of January 1, 2013 - June 30, 2013"* to TCEQ.
August 2013	X		Submittal of "*Indoor Air Monitoring Report*" to the EPA.
May 2013	X		Performed Indoor Air Monitoring at Bldgs. 1A, 1B, 4, 6, and 7.
April 2013	X	X	Performed a facility-wide synoptic gauging event and sampled 50 wells in the 1st and 2nd WBZs as part of the AOC Area Long-term GMP.
March 2013	X		Submittal of "*AOC Annual Groundwater Monitoring Report"* to EPA Region 6.
November 2012	X		Performed Indoor Air Monitoring at Bldgs. 1A, 1B, 4, 6, and 7.
October 2012a	X	X	Performed a facility-wide synoptic gauging event and sampled 15 wells in the 1st and 2nd WBZs as part of the AOC Area Long-term GMP.
October 2012b	X		Installed the remaining 22 Phase 1B Zone 3 SVE wells on the Elementis Chromium, L.P. (Elementis) Facility.
September 2012a	X		Submittal of "*Indoor Air Monitoring Report*" to the EPA.
September 2012b		X	Submittal of "*Final Groundwater Monitoring Program, Semiannual Report, Reporting Period of January 1, 2012 - June 30, 2012"* to TCEQ.
August 2012	X		Installed three Zone 3 SVE Phase 1B wells and three monitor wells on the Elementis Facility.
August 2012	X		Submittal of "*Soil Vapor Extraction System Construction Completion Report*" to the EPA.

Table 1. Site Chronology (Continued)

Date	Area Addressed		Description
	AOC(1)	AFJ(2)	
April 2012	X	X	Performed a facility-wide synoptic gauging event and sampled 37 wells in the 1st and 2nd WBZs as part of the AOC Area Long-term GMP.
June 2012	X		Performed Indoor Air Monitoring at Bldgs. 1A, 1B, 4, 6, and 7.
March 2012	X		Submittal of "*AOC Annual Groundwater Monitoring Report*" to EPA Region 6.
February 2012	X		SVE startup initiated.
December 2011	X		Initiated testing of Phase 1A SVE system as part of the light non-aqueous phase liquid (LNAPL) Removal System Upgrade.
November 2011	X		Performed indoor air monitoring at Buildings 1A, 1B, 4, 6, and 7.
October 2011	X	X	Performed a facility-wide synoptic gauging event and sampled 15 wells in the 1st and 2nd WBZs as part of the AOC Area Long-term GMP.
September 2011		X	Submittal of "*Final Groundwater Monitoring Program, Semiannual Report, Reporting Period of January 1, 2011 - June 30, 2011*" to TCEQ.
May 2011	X		Installed 15 SVE Phase 1A wells and three monitor wells on the Elementis Facility.
April 2011	X	X	Performed a facility-wide synoptic gauging event and sampled 36 wells in the 1st and 2nd WBZs as part of the AOC Area Long-term GMP.
March 2011	X		Submittal of "*AOC Annual Groundwater Monitoring Report*" to EPA Region 6.
October 2010	X	X	Performed a facility-wide synoptic gauging event and sampled 41 wells in the 1st and 2nd WBZs as part of the AOC Area Short-term GMP.
September 2010a		X	Submittal of "*Final Groundwater Monitoring Program, Semiannual Report, Reporting Period of January 1, 2010 - June 30, 2010*" to TCEQ.
September 2010b	X		Submittal of "*AOC Interim Measures (IM) Completion Report*" to EPA Region 6.
July 2010	X		Performed quarterly sampling of four 1st WBZ monitor wells as part of the AOC Area Short-term GMP.
April 2010	X	X	Performed a facility-wide synoptic gauging event and sampled 37 wells in the 1st and 2nd WBZs as part of the AOC Area Short-term GMP.
March 2010	X		Performed quarterly sampling of three 1st WBZ monitor wells as part of the AOC Area Short-term GMP.
February - March 2010	X		Installed three additional recovery wells and six additional monitor wells, and modified three recovery trench wells in the Cofferdam Area.
February 2010a	X		Submittal of "*Corrective Measures Study*" to EPA Region 6.
February 2010b	X		Submittal of "*Facility Investigation Report*" to EPA Region 6.
October 2009 - January 2010	X		Installed a 900-foot (ft) long subsurface barrier wall, including along the Cofferdam, from the ground surface to the clay aquitard underlying the 1st WBZ.
April 1998 - October 2010		X	Agreed Final Judgment (AFJ) Semiannual Groundwater Monitoring Events.
December 2009	X		Submittal of "*LNAPL Removal System Upgrade Work Plan*" to EPA Region 6.
October 2009	X		Plugged and abandoned EMW-U4T in preparation for barrier wall installation.
October 2009	X	X	Performed a facility-wide synoptic gauging event and sampled 2nd WBZ wells EMW-L8T, EMW-L9T, EMW-L39T, EMW-L6T, and OW-L08.
September 2009	X		Performed cone penetrometer testing (CPT) and Hydropunch® groundwater sampling in the IM Area east of monitor well MW-U31 to investigate extent of constituents.
August 2009		X	Received TCEQ approval for the Addendum to the Groundwater Affected Property Assessment Report (APAR).

Table 1. Site Chronology (Continued)

Date	Area Addressed		Description
	AOC(1)	AFJ(2)	
May - October 2009	X		Performed Facility Investigation (FI) which includes installation of two 2nd WBZ monitor wells, three 1st WBZ monitor wells, and 41 LNAPL piezometers; performance of synoptic water level surveys, groundwater monitoring events, sampling of indoor air and soil vapor, LNAPL characterization, aquifer testing (baildown testing), CPT and groundwater sampling, petrophysical core sampling, and soil and sediment sampling.
February 2009	X		Submittal and approval of "*Addendum to February 3, 2003 Facility Investigation Work Plan*."
October & December 2008	X		Performed SVE pilot test in the IM Area.
September 2008		X	TCEQ approval of the "*Addendum to the December 2003 Areas 5-14 Spill Sites - APAR Area 7 - American Chrome and Chemicals L.P. (ACC)/Port Area*," dated May 11, 2008.
August 2008		X	Received TCEQ approval for the revised AFJ GMP.
May 2008		X	Submittal of "*Addendum to the December 2003 Areas 5-14 Spill Sites - APAR Area 7 - ACC/Port Area*."
May 2008		X	Installed 1st WBZ monitor well on the Encycle property to delineate benzene in groundwater west of the Valero Energy Corporation (Valero) Quintana property.
April 1998 - July 2008		X	AFJ GMP quarterly gauging events. Modified AFJ GMP to exclude quarterly gauging.
April 2008	X	X	Conversion of parking lot wells (RWEC-01, RWEC-02, RWEC-13, RWEC-14, RWEC-15, and OW-U40) and facility wells (RWEC-07, RWEC-09, RWEC-10, RWEC-11, and RWEC-12) from Valero to El Paso Recovery System.
February 2008		X	El Paso transfers operation and maintenance (O&M) of recovery and monitor wells in the Pipeline Gallery Area (PGA) to Valero. Ended monitoring program (originally initiated in May 2007) and resumed recovery efforts in the PGA.
December 2007	X		Installed five 2nd WBZ monitor wells (EMW-L35B and EMW-L36T through EMW-L39T) on the Facility.
November 2007	X		Performed slug tests at two 2nd WBZ wells (EMW-L8T and EMW-L9T) and eight 1st WBZ wells (PZ-5, EPZ-07, EPZ-05, EMW-U7B, EMW-U5T, EMW-U3T, and EMW-U2T).
May 2007	X		Installed eight 1st WBZ monitor wells (EMW-U26T through EMW-U33T) and one 2nd WBZ monitor well (EMW-L34T). Collected and analyzed soil cores from two sample locations (PET-01 and PET-02) for petrophysical characteristics.
May 2007		X	With TCEQ approval, shut down recovery wells in the PGA and initiated monitoring program including 23 wells in the PGA.
April 2007	X		Elementis P&A 2nd WBZ monitor well OW-L27.
January - February 2007	X		Groundwater sampling event in IM Area.
January 2007	X		Installed two 2nd WBZ monitor wells (EMW-L8T and EMW-L9T), three 1st WBZ monitor wells (EMW-U6T, EMW-U7B, and EMW-U10T), and six extraction wells (EW-1 through EW-6) in the vicinity of the IM Area.
December 2006	X	X	Installed 15 monitor wells (EMW-U11T through EMW-U25T) along the Elementis property boundary.
December 2006	X		Collected and characterized LNAPL samples from wells EPZ-03 and P-08.
November 2006	X		Performed CPT/Rapid Optical Screening Tool (ROST) and direct push technology (DPT) groundwater investigation to better characterize the impacted subsurface in the 1st WBZ on the Elementis Facility.
August 2006	X		Installed five 1st WBZ monitor wells (EMW-U1T through EMW-U5T) in the IM Area.

Table 1. Site Chronology (Continued)

Date	Area Addressed		Description
	AOC[1]	AFJ[2]	
2005	X		Collected and analyzed core samples from two sample locations for petrophysical characteristics.
October 2005	X		Performed CPT/ROST investigation along pipeline corridor and Elementis property boundary.
January 2004	X		Characterized LNAPL at recovery well R4.
December 2003	X		Installed eight piezometers (EPZ-01 through EPZ-08).
September - October 2003		X	Offsite monitor wells EPCMW-01 through EPCMW-05 were installed and sampled. GUNMW-01 through GUNMW-07 were sampled to determine if offsite delineation is achieved.
September 2003		X	"*Groundwater Monitoring Program Semiannual Report*," Brown & Caldwell, submitted to TCEQ.
June 2003		X	TCEQ issued and approved a revised AFJ Appendix B.
March 2003		X	"*Groundwater Monitoring Program Semiannual Report*," Weston Solutions, published.
January 23, 2003		X	"*Joint Supplement to the Agreed Final Order*" issued by the District Court of Travis County, Texas (345th Judicial District).
January 2003	X	X	El Paso Corporation sold the refinery to Valero.
September 2002		X	"*Groundwater Monitoring Program Semiannual Report*," Brown & Caldwell, submitted to TCEQ.
September 2001		X	Interim Corrective Action System Modification Report.
January 2001	X	X	El Paso Corporation acquired Coastal Refining & Marketing, Inc.
June 1999	X	X	"*Groundwater Contamination Delineation Report*," ENSR Corporation (ENSR), published.
April - May 1999		X	Monitor wells DMW-01 and DMW-03 located on the upgradient refinery property (currently known as the Valero Refinery) were drilled to a greater depth and resampled.
January 1999		X	Groundwater monitoring and well gauging event. Groundwater samples were collected from 68 onsite and offsite wells. Fluid levels were measured in 190 wells.
May - July 1998		X	Remedial groundwater investigation activities, including 99 CPT soundings and the installation of 13 new monitor wells (MW-13 through MW-17, MWQ-05 through MWQ-08, DMW-01 through DMW-03, and DMWQ-01). Groundwater samples were collected from 71 onsite and offsite wells.
April 1998		X	Initiated AFJ GMP, which includes semiannual groundwater sampling and quarterly water level gauging. LNAPL characterization samples collected from 95 onsite and offsite wells. Groundwater samples collected from 69 onsite and offsite wells.
April 1, 1998		X	The State of Texas and Coastal entered into an AFJ.
1998	X		Constructed Cofferdam Groundwater Recovery System.
January 1996		X	LNAPL was discovered in the subsurface at the Quintana facility. Five recovery wells were installed.
1994		X	Annual testing of underground product lines and aboveground storage tanks began on the Valero Refinery (formerly Coastal Refinery).
Fall 1993		X	Additional recovery wells were installed to bring total to 34 recovery wells.
June 1993		X	"*Hydrocarbon Plume Delineation and Recovery System Status Report*," Jones and Neuse, published.
1989		X	The hydrocarbon recovery system was installed.
Mid 1980's		X	LNAPL was discovered in the subsurface at the Cantwell facility.
1971	X		Installed Cofferdam along the CCIH.

(1) U.S. Environmental Protection Agency (EPA), September 2002. Administrative Order on Consent (AOC). U.S. EPA Docket No. RCRA-VI-7003-01-01. September 6.
(2) Texas Commission on Environmental Quality (TCEQ), April 1998. Agreed Final Judgment (AFJ), No. 92-17287.

Table 2. Monitor Well Sampling Schedule for AOC Long-Term Groundwater Monitoring Program

Monitoring Locations	Semiannual Sampling	Annual Sampling
1st WBZ		
EMW-50 (1)		X
EMW-U17T	X	X
EMW-U1T		X
EMW-U26T		X
EMW-U28T		X
EMW-U29T		X
EMW-U2T		X
EMW-U30T		X
EMW-U31T(3)		X
EMW-U32T (4)	X	X
EMW-U33T		X
EMW-U3T		X
EMW-U40T		X
EMW-U41T		X
EMW-U42T		X
EMW-U6T (4)	X	X
EPZ-04		X
EPZ-05		X
LPZ-33 (3)		X
LPZ-40		X
LPZ-41		X
MW-U31	X	X
MW-U32 (2)		X
MW-U36 (4)	X	X
MW-U37		X
MW-U38		X
OW-U37	X	X
OW-U42	X	X
OW-U43	X	X
PZ-05 (2)		X
PZ-06 (4)	X	X
2nd WBZ		
EMW-L34T	X	X
EMW-L35B	X	X
EMW-L36T	X	X
EMW-L37T	X	X
EMW-L38T	X	X
EMW-L39T	X	X
EMW-L41T	X	X
EMW-L6T	X	X
EMW-L8T	X	X
EMW-L9T	X	X
OW-L08	X	X
OW-L14R	X	X
OW-L15	X	X

(1) EMW-50 is the "New Well" called for in the Corrective Measures Study (***CMS***) (February 2010a). EMW-50 was installed in March 2010 and developed in April 2010.

(2) MW-U32 was listed for semiannual monitoring in the ***CMS***. However, MW-U32 is currently operating as a recovery well and therefore was not sampled. PZ-05 was sampled in place of MW-U32 during the April 2014 sampling event.

(3) EMW-U31T and LPZ-33 had measurable light non-aqueous phase liquid (LNAPL) during the April 2014 sampling event. Therefore, no samples were collected from EMW-U31T and LPZ-33.

(4) Wells EMW-U32T, EMW-U6T, PZ-06, and MW-U36 were not included in the ***CMS*** but were added to the sampling event.

AOC - Administrative Order on Consent.

WBZ - Water bearing zone.

Table 3. Fluid Level Measurements for April and October 2014 Sampling Events

Well ID	Top of Casing Elevation (ft msl)	Specific Gravity	Date	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Hydrocarbon Thickness (ft)	Corrected GW Elevation (ft msl)
1st WBZ Monitor Wells							
CDDEEP	8.94	NA	15-Apr-14	ND	11.10	0.00	-2.16
			21-Oct-14	ND	8.45	0.00	0.49
CDSHAL	8.69	NA	15-Apr-14	ND	8.70	0.00	-0.01
			21-Oct-14	ND	10.46	0.00	-1.77
DG01	13.17	0.86	15-Apr-14	ND	10.57	0.00	2.60
			21-Oct-14	ND	10.42	0.00	2.75
DG02	13.67	0.86	15-Apr-14	ND	11.06	0.00	2.61
			21-Oct-14	ND	10.93	0.00	2.74
DG03	14.05	0.86	15-Apr-14	11.84	11.91	0.07	2.20
			21-Oct-14	11.41	11.72	0.31	2.60
DG04	13.72	0.86	15-Apr-14	11.89	12.48	0.59	1.75
			21-Oct-14	11.50	12.91	1.41	2.02
EMW45	11.36	0.85	15-Apr-14	ND	7.88	0.00	3.48
			21-Oct-14	ND	7.32	0.00	4.04
EMW46	12.47	NA	15-Apr-14	ND	8.87	0.00	3.60
			21-Oct-14	ND	8.72	0.00	3.75
EMW47	9.85	0.85	15-Apr-14	ND	7.22	0.00	2.63
			21-Oct-14	7.12	7.37	0.25	2.69
EMW48	13.19	NA	15-Apr-14	ND	11.38	0.00	1.81
			21-Oct-14	ND	11.33	0.00	1.86
EMW49	12.84	NA	15-Apr-14	ND	10.54	0.00	2.30
			21-Oct-14	ND	9.99	0.00	2.85
EMW50	13.26	NA	15-Apr-14	ND	11.27	0.00	1.99
			21-Oct-14	ND	10.46	0.00	2.80
EMWU10T	28.01	NA	15-Apr-14	ND	24.86	0.00	3.15
			21-Oct-14	ND	24.51	0.00	3.50
EMWU11T	24.85	NA	15-Apr-14	ND	18.68	0.00	6.17
			21-Oct-14	ND	17.45	0.00	7.40
EMWU12T	29.09	0.81	15-Apr-14	22.79	26.57	3.78	5.58
			21-Oct-14	22.13	26.01	3.88	6.22
EMWU13T	25.58	0.81	15-Apr-14	18.61	21.75	3.14	6.37
			21-Oct-14	18.41	21.09	2.68	6.66
EMWU14T	27.99	0.78	15-Apr-14	NM	NM	NA	NA
			21-Oct-14	NM	NM	NA	NA
EMWU15T	28.45	0.8	15-Apr-14	22.17	24.67	2.50	5.78
			21-Oct-14	22.19	24.60	2.41	5.78
EMWU16T	28.38	0.8	15-Apr-14	22.39	25.21	2.82	5.43
			21-Oct-14	22.33	24.85	2.52	5.55
EMWU17T	27.41	NA	15-Apr-14	ND	21.99	0.00	5.42
			21-Oct-14	ND	21.92	0.00	5.49
EMWU18T	26.84	0.87	15-Apr-14	21.28	22.96	1.68	5.34
			21-Oct-14	21.12	21.98	0.86	5.61
EMWU19T	25.88	0.83	15-Apr-14	20.03	21.85	1.82	5.54
			21-Oct-14	19.94	21.78	1.84	5.63
EMWU1T	21.52	NA	15-Apr-14	ND	18.11	0.00	3.41
			21-Oct-14	ND	17.55	0.00	3.97
EMWU20T	29.88	0.83	15-Apr-14	23.81	26.63	2.82	5.60
			21-Oct-14	23.76	27.04	3.28	5.56
EMWU21T	29.28	NA	15-Apr-14	ND	24.29	0.00	4.99
			21-Oct-14	ND	19.31	0.00	9.97

Table 3. Fluid Level Measurements for April and October 2014 Sampling Events (Continued)

Well ID	Top of Casing Elevation (ft msl)	Specific Gravity	Date	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Hydrocarbon Thickness (ft)	Corrected GW Elevation (ft msl)
1st WBZ Monitor Wells (Continued)							
EMWU22T	29.5	0.78	15-Apr-14	23.64	25.64	2.00	5.42
			21-Oct-14	23.30	24.46	1.16	5.94
EMWU23T	32.32	0.88	15-Apr-14	26.60	27.36	0.76	5.63
			21-Oct-14	26.04	27.19	1.15	6.14
EMWU24T	32.08	0.81	15-Apr-14	ND	25.22	0.00	6.86
			21-Oct-14	ND	24.76	0.00	7.32
EMWU25T	30.19	0.84	15-Apr-14	23.12	26.37	3.25	6.55
			21-Oct-14	22.46	26.11	3.65	7.15
EMWU26T	29.44	NA	15-Apr-14	ND	23.26	0.00	6.18
			21-Oct-14	ND	23.00	0.00	6.44
EMWU27T	29.17	0.88	15-Apr-14	22.92	24.75	1.83	6.03
			21-Oct-14	22.74	24.18	1.44	6.26
EMWU28T	28.46	NA	15-Apr-14	ND	22.70	0.00	5.76
			21-Oct-14	ND	22.30	0.00	6.16
EMWU29T	27.82	NA	15-Apr-14	ND	23.38	0.00	4.44
			21-Oct-14	ND	22.81	0.00	5.01
EMWU2T	25.43	NA	15-Apr-14	ND	22.72	0.00	2.71
			21-Oct-14	ND	22.15	0.00	3.28
EMWU30T	25.05	NA	15-Apr-14	ND	20.21	0.00	4.84
			21-Oct-14	ND	19.61	0.00	5.44
EMWU31T	26.59	NA	23-Apr-14	21.51	22.35	0.84	4.98
			21-Oct-14	21.36	22.21	0.85	5.13
EMWU32T	27.17	NA	15-Apr-14	ND	21.95	0.00	5.22
			21-Oct-14	ND	21.77	0.00	5.40
EMWU33T	13.36	NA	15-Apr-14	ND	9.54	0.00	3.82
			21-Oct-14	ND	8.43	0.00	4.93
EMWU3T	10.58	NA	15-Apr-14	ND	8.15	0.00	2.43
			21-Oct-14	ND	7.49	0.00	3.09
EMWU40T	29.85	NA	15-Apr-14	ND	23.65	0.00	6.20
			21-Oct-14	ND	23.34	0.00	6.51
EMWU41T	27.51	NA	15-Apr-14	ND	22.18	0.00	5.33
			21-Oct-14	ND	21.61	0.00	5.90
EMWU42T	27.08	NA	15-Apr-14	ND	21.82	0.00	5.26
			21-Oct-14	ND	21.71	0.00	5.37
EMWU4T	14.4	NA	15-Apr-14	ND	12.01	0.00	2.39
			21-Oct-14	ND	11.76	0.00	2.64
EMWU6T	23.24	NA	15-Apr-14	ND	19.55	0.00	3.69
			21-Oct-14	ND	18.94	0.00	4.30
EMWU7B	27.97	NA	15-Apr-14	ND	19.55	0.00	3.11
			21-Oct-14	ND	24.57	0.00	3.40
EPZ01	27.09	NA	15-Apr-14	ND	24.19	0.00	2.90
			21-Oct-14	ND	23.85	0.00	3.24
EPZ02	26.86	NA	15-Apr-14	ND	23.49	0.00	3.37
			21-Oct-14	ND	22.92	0.00	3.94
EPZ03	28.41	0.86	15-Apr-14	24.70	25.90	1.20	3.54
			21-Oct-14	24.43	25.16	0.73	3.88
EPZ04	11.06	NA	15-Apr-14	ND	8.74	0.00	2.32
			21-Oct-14	ND	8.32	0.00	2.74

Table 3. Fluid Level Measurements for April and October 2014 Sampling Events (Continued)

Well ID	Top of Casing Elevation (ft msl)	Specific Gravity	Date	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Hydrocarbon Thickness (ft)	Corrected GW Elevation (ft msl)
1st WBZ Monitor Wells (Continued)							
EPZ05	11.8	NA	15-Apr-14	ND	8.93	0.00	2.87
			21-Oct-14	ND	7.70	0.00	4.10
EPZ06	12.68	0.9	15-Apr-14	ND	8.81	0.00	3.87
			21-Oct-14	ND	8.51	0.00	4.17
EPZ07	13.43	NA	15-Apr-14	ND	9.91	0.00	3.52
			21-Oct-14	ND	9.69	0.00	3.74
EPZ08	15.65	NA	15-Apr-14	ND	13.71	0.00	1.94
			21-Oct-14	ND	13.37	0.00	2.28
EPZ09	26.69	0.86	15-Apr-14	21.10	23.72	2.62	5.22
			21-Oct-14	20.95	22.77	1.82	5.48
EPZ11	28.35	0.86	15-Apr-14	22.53	25.13	2.60	5.45
			21-Oct-14	22.46	24.94	2.48	5.54
EPZ12	27.78	0.85	15-Apr-14	23.37	24.33	0.96	4.26
			21-Oct-14	22.93	23.45	0.52	4.77
EW7	11.1	NA	15-Apr-14	ND	7.46	0.00	3.64
			21-Oct-14	ND	7.37	0.00	3.73
EW8	11.69	NA	15-Apr-14	ND	8.20	0.00	3.49
			21-Oct-14	ND	7.92	0.00	3.77
EW9	15.72	NA	15-Apr-14	ND	13.81	0.00	1.91
			21-Oct-14	ND	13.12	0.00	2.60
EWA	13.84	NA	15-Apr-14	ND	12.13	0.00	1.71
			21-Oct-14	ND	13.50	0.00	0.34
EWA-EAST	13.78	0.86	15-Apr-14	11.15	13.58	2.43	2.29
			21-Oct-14	11.83	12.15	0.32	1.91
EWB	13.18	NA	15-Apr-14	ND	25.34	0.00	-12.16
			21-Oct-14	ND	9.85	0.00	3.33
EWB-EAST	13.04	0.86	15-Apr-14	ND	10.25	0.00	2.79
			21-Oct-14	ND	10.07	0.00	2.97
EWC	13.51	NA	15-Apr-14	ND	10.85	0.00	2.66
			21-Oct-14	ND	10.9	0.00	2.61
EWC-EAST	13.68	NA	15-Apr-14	ND	11.00	0.00	2.68
			21-Oct-14	ND	10.87	0.00	2.81
EWD	13.09	NA	15-Apr-14	ND	17.72	0.00	-4.63
			21-Oct-14	ND	9.47	0.00	3.62
LPZ01	28.82	NA	15-Apr-14	ND	21.49	0.00	7.33
			21-Oct-14	ND	21.06	0.00	7.76
LPZ02	31.04	NA	15-Apr-14	ND	24.94	0.00	6.10
			21-Oct-14	ND	24.45	0.00	6.59
LPZ03	30.09	NA	15-Apr-14	ND	23.25	0.00	6.84
			21-Oct-14	ND	22.81	0.00	7.28
LPZ04	30.99	NA	15-Apr-14	ND	24.95	0.00	6.04
			21-Oct-14	ND	24.52	0.00	6.47
LPZ05	30.34	0.88	15-Apr-14	23.52	28.30	4.78	6.23
			21-Oct-14	23.40	28.07	4.67	6.37
LPZ06	29.24	NA	15-Apr-14	ND	23.10	0.00	6.14
			21-Oct-14	ND	22.88	0.00	6.36
LPZ07	28.02	NA	15-Apr-14	ND	22.01	0.00	6.01
			21-Oct-14	ND	21.87	0.00	6.15

Table 3. Fluid Level Measurements for April and October 2014 Sampling Events (Continued)

Well ID	Top of Casing Elevation (ft msl)	Specific Gravity	Date	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Hydrocarbon Thickness (ft)	Corrected GW Elevation (ft msl)
1st WBZ Monitor Wells (Continued)							
LPZ08	29.31	NA	15-Apr-14	ND	23.52	0.00	5.79
			21-Oct-14	ND	23.38	0.00	5.93
LPZ09	28.33	0.88	15-Apr-14	21.75	25.13	3.38	6.16
			21-Oct-14	21.53	24.51	2.98	6.43
LPZ10	28.37	0.88	15-Apr-14	21.87	25.65	3.78	6.04
			21-Oct-14	21.72	25.00	3.28	6.25
LPZ11	28.9	NA	15-Apr-14	ND	22.96	0.00	5.94
			21-Oct-14	ND	22.64	0.00	6.26
LPZ12	28	0.88	15-Apr-14	21.43	26.14	4.71	5.99
			21-Oct-14	21.39	25.77	4.38	6.07
LPZ13	29.32	NA	15-Apr-14	ND	23.54	0.00	5.78
			21-Oct-14	ND	23.54	0.00	5.78
LPZ14	28.88	0.88	15-Apr-14	22.64	26.91	4.27	5.72
			21-Oct-14	22.42	26.17	3.75	6.00
LPZ15	28.98	NA	15-Apr-14	23.03	23.19	0.16	5.68
			21-Oct-14	ND	22.82	0.00	5.91
LPZ16	28.91	0.88	15-Apr-14	22.30	25.99	3.69	5.86
			21-Oct-14	22.25	25.62	3.37	5.95
LPZ17	25.78	0.88	15-Apr-14	19.45	22.99	3.54	5.90
			21-Oct-14	19.47	22.57	3.10	5.93
LPZ18	26.18	0.8	15-Apr-14	19.96	23.04	3.08	5.60
			21-Oct-14	20.03	22.59	2.56	5.64
LPZ19	29.38	NA	15-Apr-14	23.33	26.09	2.76	5.50
			21-Oct-14	23.33	26.26	2.93	5.46
LPZ20	28.07	NA	15-Apr-14	ND	22.59	0.00	5.28
			21-Oct-14	ND	22.14	0.00	5.73
LPZ21	28.27	0.88	15-Apr-14	22.06	24.52	2.46	5.66
			21-Oct-14	21.89	23.61	1.72	5.92
LPZ22	28.41	0.88	15-Apr-14	22.80	24.32	1.52	5.11
			21-Oct-14	22.47	23.38	0.91	5.52
LPZ23	29.25	NA	15-Apr-14	ND	23.63	0.00	5.34
			21-Oct-14	ND	23.24	0.00	5.73
LPZ24	25.13	0.8	15-Apr-14	19.37	21.87	2.50	5.26
			21-Oct-14	19.42	20.07	0.65	5.58
LPZ25	24.29	0.88	15-Apr-14	18.68	21.58	2.90	5.05
			21-Oct-14	18.35	20.43	2.08	5.48
LPZ26	24.81	NA	15-Apr-14	ND	19.64	0.00	5.17
			21-Oct-14	ND	19.40	0.00	5.41
LPZ27	27.58	0.88	15-Apr-14	22.09	26.02	3.93	4.77
			21-Oct-14	21.70	24.91	3.21	5.25
LPZ28	25.45	0.88	15-Apr-14	20.28	24.20	3.92	4.69
			21-Oct-14	19.97	23.22	3.25	5.08
LPZ29	28.54	NA	15-Apr-14	ND	23.35	0.00	5.19
			21-Oct-14	ND	23.23	0.00	5.31
LPZ30	27.32	NA	15-Apr-14	21.71	24.22	2.51	5.26
			21-Oct-14	21.65	23.95	2.30	5.35
LPZ31	27.46	0.8	15-Apr-14	21.54	24.53	2.99	5.32
			21-Oct-14	21.50	24.01	2.51	5.46

Table 3. Fluid Level Measurements for April and October 2014 Sampling Events (Continued)

Well ID	Top of Casing Elevation (ft msl)	Specific Gravity	Date	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Hydrocarbon Thickness (ft)	Corrected GW Elevation (ft msl)
1st WBZ Monitor Wells (Continued)							
LPZ32	28.22	NA	15-Apr-14	ND	24.03	0.00	4.19
			21-Oct-14	ND	23.49	0.00	4.73
LPZ33	27.14	0.86	15-Apr-14	21.99	22.01	0.02	5.15
			21-Oct-14	ND	21.88	0.00	5.26
LPZ34	26.49	NA	15-Apr-14	ND	22.77	0.00	3.72
			21-Oct-14	ND	22.23	0.00	4.26
LPZ35	24.82	NA	15-Apr-14	21.17	22.41	1.24	3.48
			21-Oct-14	20.71	22.23	1.52	3.90
LPZ37	26.18	NA	15-Apr-14	ND	21.40	0.00	4.78
			21-Oct-14	ND	21.17	0.00	5.01
LPZ38	26.57	0.86	15-Apr-14	ND	22.64	0.00	3.93
			21-Oct-14	ND	22.31	0.00	4.26
LPZ39	27.12	NA	15-Apr-14	ND	22.34	0.00	4.78
			21-Oct-14	ND	22.12	0.00	5.00
LPZ40	26.94	NA	15-Apr-14	ND	21.62	0.00	5.32
			21-Oct-14	ND	21.55	0.00	5.39
LPZ41	25.8	NA	15-Apr-14	ND	20.89	0.00	4.91
			21-Oct-14	ND	20.68	0.00	5.12
LPZ44	25.75	NA	15-Apr-14	ND	21.15	0.00	4.60
			21-Oct-14	ND	20.82	0.00	4.93
LPZ45	28.33	0.86	15-Apr-14	22.77	26.26	3.49	5.07
			21-Oct-14	22.45	24.39	1.94	5.61
LPZ46	24.97	0.86	15-Apr-14	19.11	22.33	3.22	5.41
			21-Oct-14	18.98	20.22	1.24	5.82
LPZ47	28.41	0.86	15-Apr-14	ND	22.64	0.00	5.77
			21-Oct-14	ND	22.32	0.00	6.09
LPZ48	27.91	0.86	15-Apr-14	21.69	24.51	2.82	5.82
			21-Oct-14	21.65	23.11	1.46	6.05
LPZ49	28.48	0.88	15-Apr-14	22.59	25.10	2.51	5.59
			21-Oct-14	22.59	25.17	2.58	5.58
LPZ50	30.16	0.88	15-Apr-14	24.22	26.60	2.38	5.65
			21-Oct-14	24.24	26.78	2.54	5.62
LPZ51	28.85	0.88	15-Apr-14	22.96	25.16	2.20	5.63
			21-Oct-14	22.85	25.14	2.29	5.73
MP01	12.87	0.86	15-Apr-14	ND	10.65	0.00	2.23
			21-Oct-14	ND	10.55	0.00	2.33
MP02	13.14	NA	15-Apr-14	ND	10.97	0.00	2.18
			21-Oct-14	ND	10.86	0.00	2.29
MP03	14.85	0.86	15-Apr-14	13.01	14.11	1.10	1.69
			21-Oct-14	12.61	13.78	1.17	2.08
MP03A	14.74	0.86	15-Apr-14	12.02	12.40	0.38	2.67
			21-Oct-14	11.63	12.63	1.00	2.97
MP04	15.4	NA	15-Apr-14	ND	13.53	0.00	1.87
			21-Oct-14	ND	13.06	0.00	2.34
MP05	15.23	0.86	15-Apr-14	13.90	14.58 DTB	0.68	NA
			21-Oct-14	13.68	ND	1.12	NA
MP06	15.42	0.86	15-Apr-14	ND	13.70	0.00	1.72
			21-Oct-14	ND	13.80	0.00	1.62

Table 3. Fluid Level Measurements for April and October 2014 Sampling Events (Continued)

Well ID	Top of Casing Elevation (ft msl)	Specific Gravity	Date	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Hydrocarbon Thickness (ft)	Corrected GW Elevation (ft msl)
1st WBZ Monitor Wells (Continued)							
MP06A	15.26	0.86	15-Apr-14	12.68	13.90	1.22	2.41
			21-Oct-14	12.62	14.02	1.40	2.44
MP07	15.97	0.86	15-Apr-14	14.34	17.36	3.02	1.22
			21-Oct-14	13.20	16.00	2.80	2.39
MP07A	15.16	0.86	15-Apr-14	12.46	15.65	3.19	2.25
			21-Oct-14	12.71	14.94	2.23	2.14
MP08	15.99	0.86	15-Apr-14	ND	12.85	0.00	3.14
			21-Oct-14	ND	12.51	0.00	3.48
MP09	13.36	NA	15-Apr-14	ND	10.16	0.00	3.20
			21-Oct-14	ND	9.80	0.00	3.56
MWU25	13.19	0.86	15-Apr-14	ND	10.62	0.00	2.57
			21-Oct-14	ND	9.85	0.00	3.34
MWU26A	14.8	0.86	15-Apr-14	ND	12.31	0.00	2.49
			21-Oct-14	ND	18.20	0.00	-3.40
MWU27	13.82	0.86	15-Apr-14	ND	11.17	0.00	2.74
			21-Oct-14	10.91	11.02	0.11	2.89
MWU28	13.01	NA	15-Apr-14	ND	11.03	0.00	1.98
			21-Oct-14	ND	10.20	0.00	2.81
MWU29	13.82	NA	15-Apr-14	ND	12.36	0.00	1.46
			21-Oct-14	ND	11.56	0.00	2.26
MWU31	13.38	NA	15-Apr-14	ND	11.35	0.00	2.03
			21-Oct-14	ND	10.60	0.00	2.78
MWU32	13.35	NA	15-Apr-14	ND	11.16	0.00	2.19
			21-Oct-14	ND	10.45	0.00	2.90
MWU33	26.41	0.86	15-Apr-14	22.80	25.87	3.07	3.18
			21-Oct-14	22.53	24.95	2.42	3.54
MWU34	29.47	0.88	15-Apr-14	24.63	28.61	3.98	4.35
			21-Oct-14	24.41	27.00	2.59	4.74
MWU36	10.97	NA	15-Apr-14	ND	7.39	0.00	3.58
			21-Oct-14	ND	6.15	0.00	4.82
MWU37	27.98	NA	15-Apr-14	ND	22.45	0.00	5.53
			21-Oct-14	ND	22.25	0.00	5.73
MWU38	27.14	NA	15-Apr-14	ND	21.72	0.00	5.42
			21-Oct-14	ND	21.57	0.00	5.57
OWU25	32.28	0.81	15-Apr-14	25.52	28.81	3.29	6.14
			21-Oct-14	25.42	26.61	1.19	6.64
OWU26	29.27	NA	15-Apr-14	ND	23.41	0.00	5.86
			21-Oct-14	ND	23.04	0.00	6.23
OWU27	29.13	0.83	15-Apr-14	23.26	24.49	1.23	5.66
			21-Oct-14	23.08	ND	1.44	NA
OWU28	27.4	NA	15-Apr-14	ND	22.01	0.00	5.39
			21-Oct-14	ND	21.92	0.00	5.48
OWU31	29.09	0.87	15-Apr-14	22.65	25.49	2.84	6.08
			21-Oct-14	22.51	25.37	2.86	6.22
OWU32	29.47	0.88	15-Apr-14	22.84	26.48	3.64	6.18
			21-Oct-14	22.67	26.10	3.43	6.38
OWU33	30.44	0.79	15-Apr-14	23.19	27.24	4.05	6.38
			21-Oct-14	22.69	26.53	3.84	6.93

Table 3. Fluid Level Measurements for April and October 2014 Sampling Events (Continued)

Well ID	Top of Casing Elevation (ft msl)	Specific Gravity	Date	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Hydrocarbon Thickness (ft)	Corrected GW Elevation (ft msl)
1st WBZ Monitor Wells (Continued)							
OWU36	11.87	NA	15-Apr-14	ND	6.36	0.00	5.51
			21-Oct-14	ND	6.15	0.00	5.72
OWU37	9.08	NA	15-Apr-14	ND	5.42	0.00	3.66
			21-Oct-14	ND	4.28	0.00	4.80
OWU38	14.11	NA	15-Apr-14	ND	10.30	0.00	3.81
			21-Oct-14	ND	10.05	0.00	4.06
OWU42	28.61	NA	15-Apr-14	ND	22.40	0.00	6.21
			21-Oct-14	ND	22.14	0.00	6.47
OWU43	27.07	NA	15-Apr-14	ND	21.47	0.00	5.60
			21-Oct-14	ND	21.07	0.00	6.00
OWU44	28.23	0.87	15-Apr-14	22.94	25.21	2.27	4.99
			21-Oct-14	22.59	25.27	2.68	5.28
OWU47	28.34	NA	15-Apr-14	ND	22.83	0.00	5.62
			21-Oct-14	ND	22.66	0.00	5.80
OWU48	28.89	0.88	15-Apr-14	22.32	26.40	4.08	5.78
			21-Oct-14	22.44	25.11	2.67	5.83
OWU49	28.3	0.88	15-Apr-14	21.74	24.93 DTB	> 3.19 DTB	NA
			21-Oct-14	21.83	24.24	2.41	5.87
PZ05	14.62	NA	15-Apr-14	ND	13.06	0.00	1.56
			21-Oct-14	ND	12.41	0.00	2.21
PZ06	14.53	NA	15-Apr-14	ND	12.68	0.00	1.85
			21-Oct-14	ND	12.26	0.00	2.27
PZ07	13.93	NA	15-Apr-14	ND	11.07	0.00	2.86
			21-Oct-14	ND	11.03	0.00	2.90
PZ09	11.79	NA	15-Apr-14	ND	9.19	0.00	2.60
			21-Oct-14	ND	9.07	0.00	2.72
PZ10	12.33	0.86	15-Apr-14	9.54	10.75	1.21	2.62
			21-Oct-14	9.17	10.41	1.24	2.99
R1	13.98	NA	15-Apr-14	ND	13.02	0.00	0.96
			21-Oct-14	ND	11.12	0.00	2.86
R2	12.77	0.86	15-Apr-14	ND	10.10	0.00	2.67
			21-Oct-14	ND	11.45	0.00	1.32
R3	14.49	0.86	15-Apr-14	11.69	13.01	1.32	2.61
			21-Oct-14	11.97	13.28	1.31	2.34
R4	11.4	NA	15-Apr-14	ND	10.73	0.00	0.67
			21-Oct-14	ND	7.65	0.00	3.75
RW1	13.67	0.86	15-Apr-14	11.18	11.42	0.24	2.46
			21-Oct-14	ND	22.80	0.00	-9.13
RW2	10.91	NA	15-Apr-14	ND	8.26	0.00	2.65
			21-Oct-14	ND	7.60	0.00	3.31
RW3	14.88	0.86	15-Apr-14	ND	12.89	0.00	1.99
			21-Oct-14	ND	12.20	0.00	2.68
T11	24.74	0.85	15-Apr-14	NA	NA	NA	NA
			21-Oct-14	NA	NA	NA	NA
T12	11.54	NA	15-Apr-14	ND	6.88	0.00	4.66
			21-Oct-14	ND	6.49	0.00	5.05
2nd WBZ Monitor Wells							
EMWL6T	23.03	NA	15-Apr-14	ND	19.11	0.00	3.92
			21-Oct-14	ND	18.52	0.00	4.51

Table 3. Fluid Level Measurements for April and October 2014 Sampling Events (Continued)

Well ID	Top of Casing Elevation (ft msl)	Specific Gravity	Date	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Hydrocarbon Thickness (ft)	Corrected GW Elevation (ft msl)
2nd WBZ Monitor Wells (Continued)							
EMWL8T	27.09	NA	15-Apr-14	ND	23.65	0.00	3.44
			21-Oct-14	ND	23.07	0.00	4.02
EMWL9T	27.86	NA	15-Apr-14	ND	24.46	0.00	3.40
			21-Oct-14	ND	23.88	0.00	3.98
EMWL34T	30.15	NA	15-Apr-14	ND	24.61	0.00	5.54
			21-Oct-14	ND	24.22	0.00	5.93
EMWL35B	30.11	NA	15-Apr-14	ND	24.9	0.00	5.21
			21-Oct-14	ND	24.51	0.00	5.60
EMWL36T	29.16	NA	15-Apr-14	ND	23.96	0.00	5.20
			21-Oct-14	ND	23.55	0.00	5.61
EMWL37T	29.88	NA	15-Apr-14	ND	24.75	0.00	5.13
			21-Oct-14	ND	24.35	0.00	5.53
EMWL38T	28.68	NA	15-Apr-14	ND	24.46	0.00	4.22
			21-Oct-14	ND	24.05	0.00	4.63
EMWL39T	28.42	NA	15-Apr-14	ND	24.87	0.00	3.55
			21-Oct-14	ND	24.34	0.00	4.08
EMWL41T	27.54	NA	15-Apr-14	ND	23.2	0.00	4.34
			21-Oct-14	ND	22.68	0.00	4.86
OWL08	24.54	NA	15-Apr-14	ND	21.39	0.00	3.15
			21-Oct-14	ND	20.87	0.00	3.67
OWL1	27.12	NA	15-Apr-14	ND	24.09	0.00	3.03
			21-Oct-14	ND	23.54	0.00	3.58
OWL14R	27.5	NA	15-Apr-14	ND	23.71	0.00	3.79
			21-Oct-14	ND	23.19	0.00	4.31
OWL15	21.53	NA	15-Apr-14	ND	18.29	0.00	3.24
			21-Oct-14	ND	17.69	0.00	3.84
OWL25	21.36	NA	15-Apr-14	ND	17.93	0.00	3.43
			21-Oct-14	ND	17.34	0.00	4.02

BTOC - Below top of casing.
DTB - Depth to bottom of well. Groundwater was not encountered.
ft - Feet.
GW - Groundwater.
ID - Identification.
LNAPL - Light non-aqueous phase liquid.
msl - Mean sea level.
NA - Not applicable.
ND - Not detected.
NM - Not measured during this event.
WBZ - Water bearing zone.

Table 4. Groundwater Quality Parameters

Monitoring Locations	Date	Temperature (°C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH (pH unit)	Oxidation-Reduction Potential (mV)	Turbidity (NTU)
1st WBZ							
EMW-49	24-Apr-14	25.22	19.4	0.88	7.11	-66	6.2
EMW-50	24-Apr-14	25.00	12.4	0.33	7.34	-68	0.0
EMW-U1T	17-Apr-14	23.28	7.06	0.41	7.17	60	0.0
EMW-U25T	17-Apr-14	23.06	7.28	0.22	6.65	-62	0.5
	24-Apr-14	26.80	6.49	1.12	6.71	-170	21.5
EMW-U26T	16-Apr-14	23.57	4.74	0.45	7.02	-238	0.6
	24-Apr-14	24.92	4.78	0.31	6.81	-65	5.9
EMW-U28T	16-Apr-14	24.65	1.93	0.37	8.06	-97	6.4
	24-Apr-14	25.07	1.68	0.31	7.62	-45	5.4
EMW-U29T	16-Apr-14	23.30	11.4	0.28	8.37	-129	14.9
	24-Apr-14	24.43	10.0	0.30	8.28	-158	6.8
EMW-U2T	18-Apr-14	24.04	17.6	0.19	6.47	-262	0.0
EMW-U30T	16-Apr-14	23.86	6.41	0.46	7.61	-10	0.0
EMW-U32T	17-Apr-14	20.77	14.7	0.26	7.93	-35	15.1
	24-Oct-14	24.75	19.7	0.32	7.26	-90	0.0
EMW-U33T	17-Apr-14	20.75	23.8	0.17	7.03	-127	0.0
EMW-U3T	18-Apr-14	20.17	28.9	0.21	6.64	-185	1.2
	23-Oct-14	27.46	44.0	0.18	5.9	-90	0.0
EMW-U40T	16-Apr-14	21.91	8.05	0.36	6.42	-241	4.2
	24-Apr-14	25.01	6.46	0.21	6.4	-365	4.4
EMW-U41T	16-Apr-14	25.93	7.66	0.26	7.36	-66	0.7
EMW-U42T	23-Apr-14	23.78	14.7	0.18	7.12	-19	0.0
EMW-U6T	17-Apr-14	23.54	6.43	0.2	8.08	-267	1.6
	24-Apr-14	23.98	5.77	0.36	7.89	-207	19.4
	23-Oct-14	26.75	8.8	0.35	7.16	-230	0.0
EPZ-04	18-Apr-14	20.16	42.5	0.17	7.05	-307	0.3
EPZ-05	18-Apr-14	21.81	49.6	0.09	7.08	-378	0.7
	24-Apr-14	22.41	44.2	0.16	7.17	-379	0.0
LPZ-40	23-Apr-14	23.38	18.5	0.17	6.95	-101	1.4
LPZ-41	23-Apr-14	25.21	19.1	0.15	6.81	-133	12.3
MW-U28	24-Apr-14	25.00	6.96	0.17	7.34	-249	0.08
MW-U31	24-Apr-14	25.19	18.4	0.19	6.92	-137	0.0
	24-Oct-14	27.69	42.4	0.26	6.21	6	0.0
MW-U36	23-Apr-14	26.28	24.3	0.05	6.68	-372	3.0
	24-Oct-14	25.00	42.2	0.66	6.13	-346	2.1

Table 4. Groundwater Quality Parameters (Continued)

Monitoring Locations	Date	Temperature (°C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH (pH unit)	Oxidation-Reduction Potential (mV)	Turbidity (NTU)
1st WBZ (Continued)							
MW-U37	23-Apr-14	25.50	4.27	0.15	7.39	-226	0.0
MW-U38	23-Apr-14	24.06	24.9	0.07	9.09	-392	2.3
PZ-05	24-Apr-14	24.95	45.4	0.17	7.37	-296	0.0
PZ-06	23-Apr-14	24.93	43.0	0.09	6.81	34	0.0
	24-Oct-14	27.57	68.5	0.34	6.41	-266	0.0
2nd WBZ							
EMW-L34T	22-Apr-14	25.25	18.1	0.20	6.34	-212	0.0
	23-Oct-14	26.83	31.5	0.29	5.44	-219	0.0
EMW-L35B	22-Apr-14	25.24	23.9	0.39	6.23	-100	0.0
	23-Oct-14	25.61	43.9	0.34	5.31	-51	0.0
EMW-L36T	22-Apr-14	24.82	13.1	0.23	6.39	-36	0.3
	23-Oct-14	26.86	22.0	0.30	5.53	-30	0.0
EMW-L37T	21-Apr-14	26.55	31.4	0.33	6.56	-67	0.0
	23-Oct-14	26.01	48.5	0.42	5.74	-64	0.0
EMW-L38T	21-Apr-14	26.36	48.9	0.30	6.41	-117	7.0
	22-Oct-14	27.42	76.5	0.36	5.83	-104	0.0
EMW-L39T	22-Apr-14	27.3	39.6	0.29	6.39	-115	0.0
	23-Oct-14	26.14	68.8	0.43	5.52	-169	0.0
EMW-L41T	21-Apr-14	26.68	41.1	0.22	6.48	-133	0.0
	22-Oct-14	27.94	63.0	0.35	5.82	-122	0.0
EMW-L6T	21-Apr-14	25.19	42.9	0.26	6.50	-93	10
	22-Oct-14	26.96	66.3	0.43	5.89	-110	9.2
EMW-L8T	22-Apr-14	26.21	38.2	0.22	6.52	-72	0.0
	22-Oct-14	26.77	65.3	0.50	5.76	96	0.0
EMW-L9T	22-Apr-14	26.98	39.44	0.14	6.43	-81	0.0
	23-Oct-14	27.69	68.9	0.17	5.58	-43	0.0
OW-L08	22-Apr-14	25.94	38.5	0.40	6.50	-67	0.0
OW-L14R	23-Apr-14	25.44	37.4	0.37	6.60	-190	3.0
	22-Oct-14	26.78	62.1	0.34	5.90	-194	0.0

°C - Degrees Celsius.
mg/L - Milligram per liter.
mS/cm - Millisiemen per centimeter.
mV - Millivolt.
NTU - Nephelometric turbidity unit.
WBZ - Water bearing zone.

Table 5. Vertical Gradients at Paired Wells

Date	Groundwater Elevations (ft msl)		Depth to Well Screen (ft)	Depth to Well Screen (ft)	Surface Elevation	Surface Elevation	Calculated Gradient*	Gradient Direction
	Deep Well	Shallow Well	Screen Length (ft)	Screen Length (ft)				
	EMW-L38T	**EMW-U28T**	**EMW-L38T**	**EMW-U28T**	**EMW-L38T**	**EMW-U28T**		
4/15/2014	4.22	5.76	74.5	17	25.6	25.5	0.02749	Downward
10/21/2014	4.63	6.16	10	10			0.02721	Downward
	EMW-L37T	**EMW-U25T**	**EMW-L37T**	**EMW-U25T**	**EMW-L37T**	**EMW-U25T**		
4/15/2014	5.13	3.82	64	15	27.2	27.2	0.03096	Upward
10/21/2014	5.53	4.08	10	15			0.03417	Upward
	EMW-L41T	**EMW-U41T**	**EMW-L41T**	**EMW-U41T**	**EMW-L41T**	**EMW-U41T**		
4/15/2014	4.34	5.33	82	18	25	24.8	0.0157	Downward
10/21/2014	4.86	5.9	10	10			0.01642	Downward
	EMW-L6T	**EMW-U6T**	**EMW-L6T**	**EMW-U6T**	**EMW-L6T**	**EMW-U6T**		
4/15/2014	3.92	3.69	79.5	13	20.2	20.2	0.003552	Upward
10/21/2014	4.51	4.3	10	10			0.003228	Upward
	EMW-L9T	**EMW-U10T**	**EMW-L9T**	**EMW-U10T**	**EMW-L9T**	**EMW-U10T**		
4/15/2014	3.4	3.15	80	18	25.4	25.2	0.004365	Upward
10/21/2014	3.98	3.5	5	10			0.008355	Upward
	EMW-L34T	**LPZ-13**	**EMW-L34T**	**LPZ-13**	**EMW-L34T**	**LPZ-13**		
4/15/2014	5.54	5.78	48.5	13	27.2	26.6	0.008424	Downward
10/21/2014	5.93	5.78	10	15			0.005265	Upward

* Vertical gradient mid-point value calculated using U.S. Environmental Protection Agency (EPA) On-line Tools for Site Assessment Calculation: http://www.epa.gov/athens/learn2model/part-two/onsite/vgradient02.html (EPA, 2012).

ft - Feet.

msl - Mean sea level.

Table 6. Summary of Groundwater Benzene Analytical Results

Well ID	Apr-11	Oct-11	Apr-12	Oct-12	Apr-13	Oct-13	Jan-14	Apr-14	Aug-14	Oct-14
1st WBZ										
EMW-50[1]	<0.000216	NS	0.00239	NS	<0.000140	NS	0.000326J	<0.000140 U	NS	NS
EMW-U17T[2]	**5.81**	**4.01**	**4.56**	**3.39**	**3.96**	**3.92**	NS	**3.41**	NS	**3.15**
EMW-U1T	<0.000210	NS	<0.000140	NS	<0.000140	NS	NS	<0.000140 U	NS	NS
EMW-U26T	<0.000200	NS	0.000617 J	NS	<0.000140	NS	NS	<0.000140 U	NS	NS
EMW-U28T	<0.000200	NS	0.000589 J	NS	<0.000140	NS	NS	<0.000140 U	NS	NS
EMW-U29T	<0.000887	NS	**0.64**	NS	**29.7**	NS	NS	**148**	NS	NS
EMW-U2T	0.00145	NS	0.000298 J	NS	0.000198	NS	NS	<0.000140 U	NS	NS
EMW-U30T	<0.000220	NS	<0.000140	NS	<0.000140	NS	NS	<0.000140 U	NS	NS
EMW-U31T	**10.6**	NS	**0.568 J**	NS	NS	NS	NS	NS	NS	NS
EMW-U32T	0.00526	NS	<0.000140	0.000383 J	0.0168	0.0247	NS	0.0162	NS	0.0215
EMW-U33T	<0.0100	NS	<0.0140	NS	<0.0700	NS	NS	<0.0700 U	NS	NS
EMW-U3T	<0.000200	NS	0.000467 J	NS	<0.0140	NS	NS	**2.65**	<0.000140 U	<0.0660U
EMW-U40T	**6**	NS	**20.2**	NS	**61.6**	NS	NS	**16.5**	NS	NS
EMW-U41T	<0.000200	NS	<0.000140	NS	<0.000140	NS	NS	<0.000140 U	NS	NS
EMW-U42T	0.000347	NS	<0.000700	NS	<0.000700	NS	NS	<0.000700 U	NS	NS
EMW-U6T	<0.000200	NS	<0.000140	0.000400 J	<0.000140	<0.000140	NS	<0.000140 U	NS	<0.000330U
EPZ-04	<0.000221	NS	0.000466 J	NS	<0.000140	NS	NS	<0.000140 U	NS	NS
EPZ-05	<0.000200	NS	0.000238 J	NS	<0.000140	NS	NS	<0.000140 U	NS	NS
LPZ-40	<0.000305	NS	0.00213	NS	0.00309	NS	NS	<0.000700 U	NS	NS
LPZ-41	0.013	NS	0.0102	NS	0.00118	NS	NS	0.000718 J	NS	NS
MW-U31	<0.000374	NS	0.000319 J	NS	**5.55**	NS	**14.4**	**8.42**	NS	**3.4**
MW-U36	<0.00400	NS	<0.00700	<0.00700	<0.00280	<0.00280	NS	<0.0140 U	NS	<0.000330U
MW-U37	<0.000200	NS	<0.000140	NS	<0.000140	NS	NS	<0.000140 U	NS	NS
MW-U38	0.0162	NS	0.0266	NS	0.0282	NS	NS	0.0229	NS	NS
OW-U37[2]	<0.000200	<0.000140	<0.000140	<0.000140	<0.000140	<0.000140	NS	<0.000140 U	NS	0.000680 J
OW-U42[2]	<0.000748	<0.000140	<0.000140	<0.000140	<0.000140	<0.000140	NS	<0.000140 U	NS	<0.000330 U
OW-U43[2]	**344**	**365**	**407**	**330**	**253**	**444**	NS	**543**	NS	**267**
OW-U46[2]	0.00931	0.0108	0.00976	0.00992	0.00991	0.0109	NS	0.0125	NS	0.00136
OW-U38[2]	0.000257	0.0026	0.00431	**0.101**	0.000489J	**1.63**	NS	<0.00140 U	NS	0.00609
EMWU21T[2]	0.00054	0.000224J	<0.000140	<0.000140	<0.000140	<0.000140	NS	<0.000140 U	NS	0.0571
MW-U05[2]	0.0082	0.00177	0.009035	0.00113	<0.000280	0.00201	NS	0.000649 J	NS	0.000985 J
PZ-05[3][4]	<0.000375	NS	<0.000140	NS	<0.000140	NS	NS	<0.000140 U	NS	NS
PZ-06[3]	NS	NS	**1,230**	NS	**522**	NS	NS	**124**	NS	**86.5**
PZ-09[3]	NS	NS	NS	NS	NS	**484**	NS	NS	NS	NS
EMW-U4T[3]	NS	NS	NS	NS	**957**	**15.1**	NS	NS	NS	NS
EPZ-08[3]	NS	NS	NS	NS	NS	**0.439**	NS	NS	NS	NS
RW-3[3]	NS	NS	NS	NS	**67.9**	NS	NS	NS	NS	NS
MW-U28[3]	NS	NS	NS	NS	NS	NS	0.00374	<0.000140 U	NS	NS

Table 6. Summary of Groundwater Benzene Analytical Results (Continued)

Well ID	Apr-11	Oct-11	Apr-12	Oct-12	Apr-13	Oct-13	Jan-14	Apr-14	Aug-14	Oct-14
1st WBZ (Continued)										
MW-U29(3)	NS	NS	NS	NS	NS	**0.777**	NS	NS	NS	NS
MW-U32(4)	NS	NS	NS	NS	**45.2**	**233**	NS	NS	NS	NS
EMW-48(3)	NS	NS	NS	NS	**779**	**1130**	NS	NS	NS	NS
EMW-49(3)	NS	NS	NS	NS	NS	NS	0.00014	<0.000140 U	NS	NS
EW-9(3)	NS	NS	NS	NS	NS	NS	**1.2**	NS	NS	NS
R1(3)	NS	NS	NS	NS	**943**	**1140**	NS	NS	NS	NS
2nd WBZ										
EMW-L34T	**284**	**278**	**331**	**239**	**492**	**468**	NS	**364**	NS	**399**
EMW-L35B	**19.3**	**8.07**	**3.34**	**0.346**	**2.05**	**5.88**	NS	0.00932	NS	0.0212
EMW-L36T	**1771**	**816**	**984**	**760**	**175**	**1080**	NS	**860**	NS	**873**
EMW-L37T	<0.000200	<0.000140	0.00386	0.000506 J	0.000221 J	<0.000140	NS	0.00615	NS	0.00117
EMW-L38T	0.000368 J	0.000920 J	0.000236 J	<0.000140	0.00143	<0.000140	NS	<0.000140 U	NS	<0.000330U
EMW-L39T	0.0015	0.012	0.00641	**0.158**	0.0397	0.00425	NS	0.000508 J	NS	0.00249
EMW-L41T	0.00161	0.000173 J	<0.000140	<0.000140	<0.000140	<0.000140	NS	<0.000140 U	NS	<0.000330U
EMW-L6T	0.000592 JH	<0.00700	0.000871 J	0.0152	0.000392	0.000416 J	NS	0.000228 J	NS	<0.000330U
EMW-L8T	<0.000200	<0.000140	<0.000140	0.000635 J	<0.000140	<0.000140	NS	<0.000140 U	NS	<0.000330U
EMW-L9T	0.000436 J	0.000543 J	0.000204 J	0.000630 J	<0.000140	0.000358 J	NS	<0.000140 U	NS	<0.000330U
OW-L08	<0.000200	0.00462	<0.000140	<0.000140	<0.000140	<0.000140	NS	<0.000140 U	NS	<0.000330U
OW-L14R	0.000322 JH	0.000475 J	<0.000140	0.00284	0.00622	<0.000140	NS	<0.000140 U	NS	0.00151
OW-L15(2)	0.00204	<0.000140	<0.000140	<0.000140	<0.000140	<0.000160	NS	<0.000140 U	NS	<0.000330 U

Notes:
Red indicates groundwater recovery well and grab groundwater sample collected.
All analytical results are reported in milligrams per liter (mg/L).
Analytical results that are **bolded** and shaded exceed the Final Remediation Goal (FRG) for benzene in groundwater (0.0708 mg/L).
LPZ-33 was observed to have measurable light non-aqueous phase liquid (LNAPL) during both the April and October 2013 and April 2014 sampling events. Therefore, no samples were collected from LPZ-33.
(1) EMW-50 is the "New Well" recommended in the Corrective Measures Study (***CMS***) (February 2010a). EMW-50 was installed in March 2010 and developed in April 2010.
(2) Wells are sampled as part of the Agreed Final Judgment (AFJ) Area monitoring program but benzene data is incorporated into the Administrative Order on Consent (AOC) Area monitoring program. Data for these wells was extracted from the AFJ Semiannual Reports dated September 2011 (URS Corporation [URS], September 2011) and March 2012 (RPS, March 2012).
(3) Wells not included in the AOC Area monitoring program but included to show benzene trends in IM Area.
(4) MW-U32 was listed for semiannual monitoring in the CMS. However, MW-U32 is currently operating as a recovery well and therefore, was not sampled and PZ-05 was sampled in place of MW-U32. However, grab groundwater samples were collected from MW-U32 during the April and October 2013 sampling events.
< - The analyte was analyzed for, but was not detected above the given method detection limit (MDL).
J - The analyte was detected but at a concentration below the MDL. The reported value is therefore estimated.
ID - Identification.
NS - Not sampled.
WBZ - Water bearing zone.

Figures

Path: L:\AGE\Projects\ENV\Kinder Morgan\Kinder_Morgan_Elementis\Drawings-GIS\AOC_GW_Monitoring\2014\Fig 1 Site Loc.mxd

Legend

- Elementis Property Boundary
- Adjacent Property Boundary
- IM Area

N

1,000 500 0 1,000

Feet

Notes:
AFJ - Agreed Final Judgement (TCEQ).
AOC - Administrative Order on Consent (EPA).

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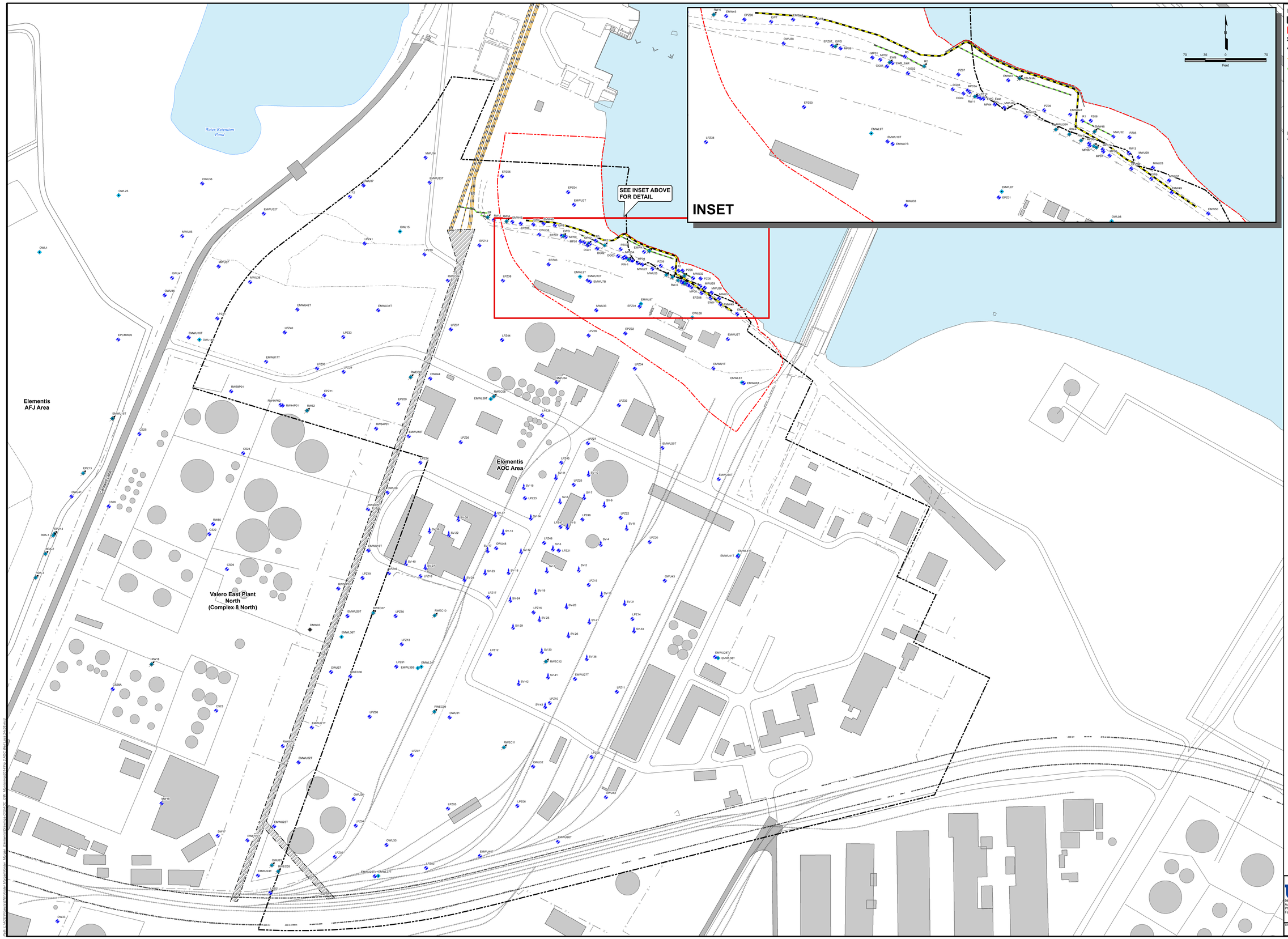
Elementis Site-Corpus Christi, Texas

Report: AOC Annual Groundwater Monitoring Report

Title: **Site Location Map**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/11/2015		1



Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Aboveground Pipeline
- Recovery Trench
- Monitor Well Location (Upper WBZ)
- Monitor Well Location (Lower WBZ)
- Monitor Well Location (Deep WBZ)
- Soil Vapor Extraction Well
- Recovery Well Location (Upper WBZ)

Note:
Recovery well RW-6 installed November 2014.

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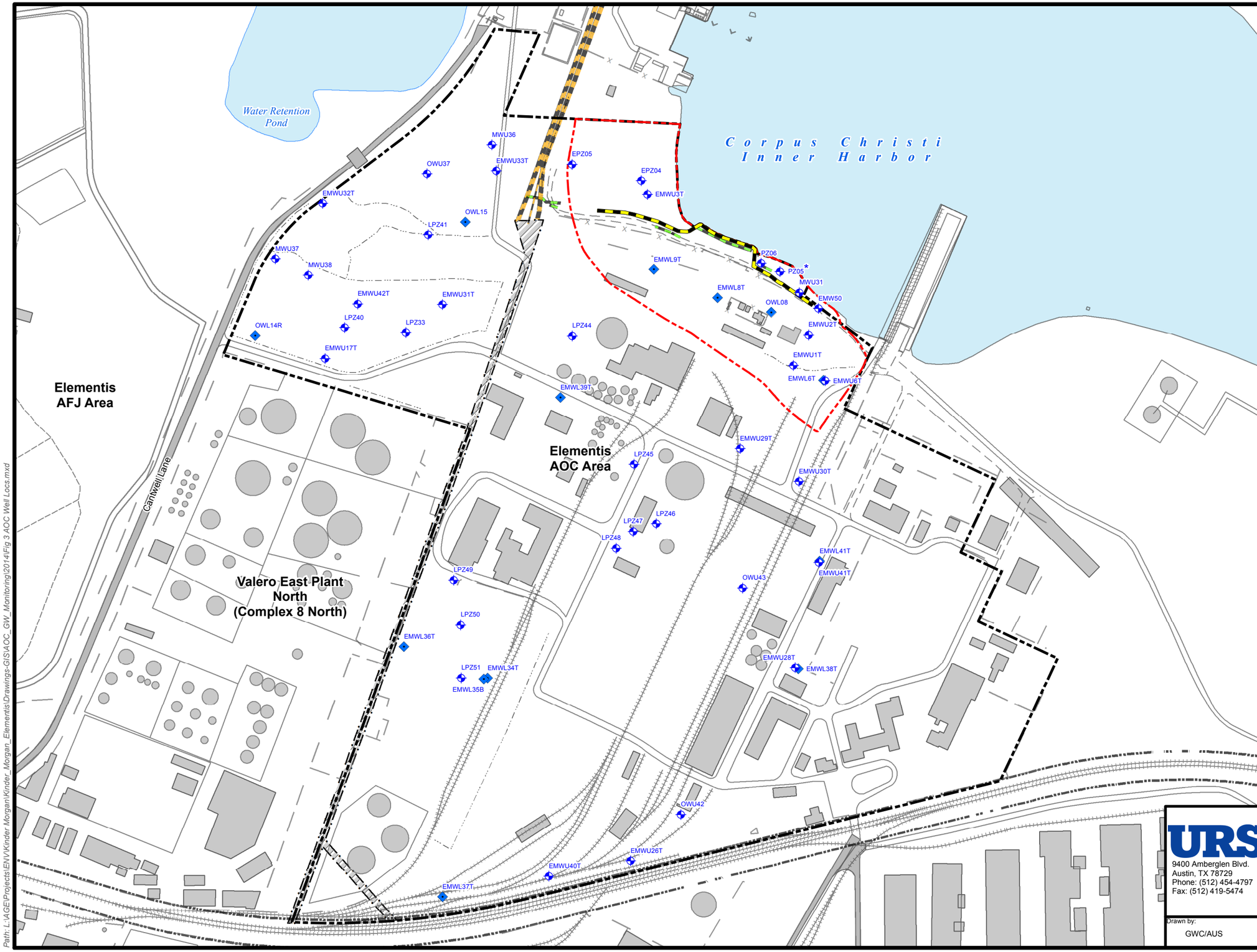
Title: **Facility Well Location Map**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/11/2015	Fig 2 AOC Well Locs 24x36	2



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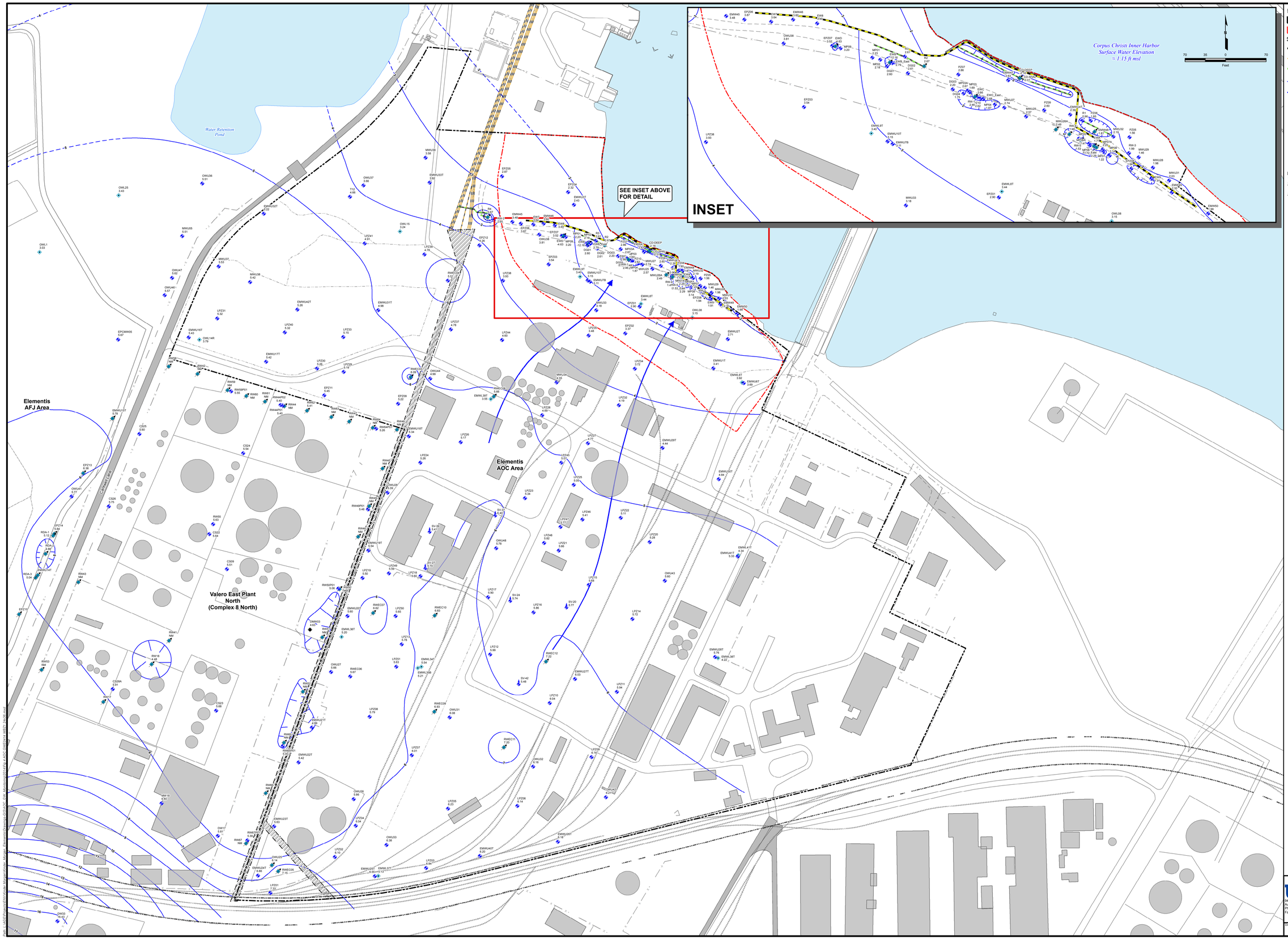
Title: **AOC Groundwater Sample Locations**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/11/2015		3

Path: L:\AGE\Projects\ENV\Kinder Morgan\Kinder_Morgan_Elementis\Drawings-GIS\AOC_GW_Monitoring\2014\Fig 3 AOC Well Locs.mxd



Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Aboveground Pipeline
- Recovery Trench
- Potentiometric Surface Contour (Dahed Where Inferred) (ft msl)
- Approximate Groundwater Flow Direction
- Monitor Well Location (Upper WBZ)
- Monitor Well Location (Lower WBZ)
- Monitor Well Location (Deep WBZ)
- Soil Vapor Extraction Well
- Recovery Well Location (Upper WBZ)
- 9.33 Groundwater Elevation (ft msl)
- WBZ Water Bearing Zone

Notes:
1. Contour interval = 1 foot.
2. Data for wells on adjacent Valero property provided by DiSorbo Consulting, LLC.
3. Wells screened below the 1st WBZ were not included in the contouring of the 1st WBZ potentiometric surface.

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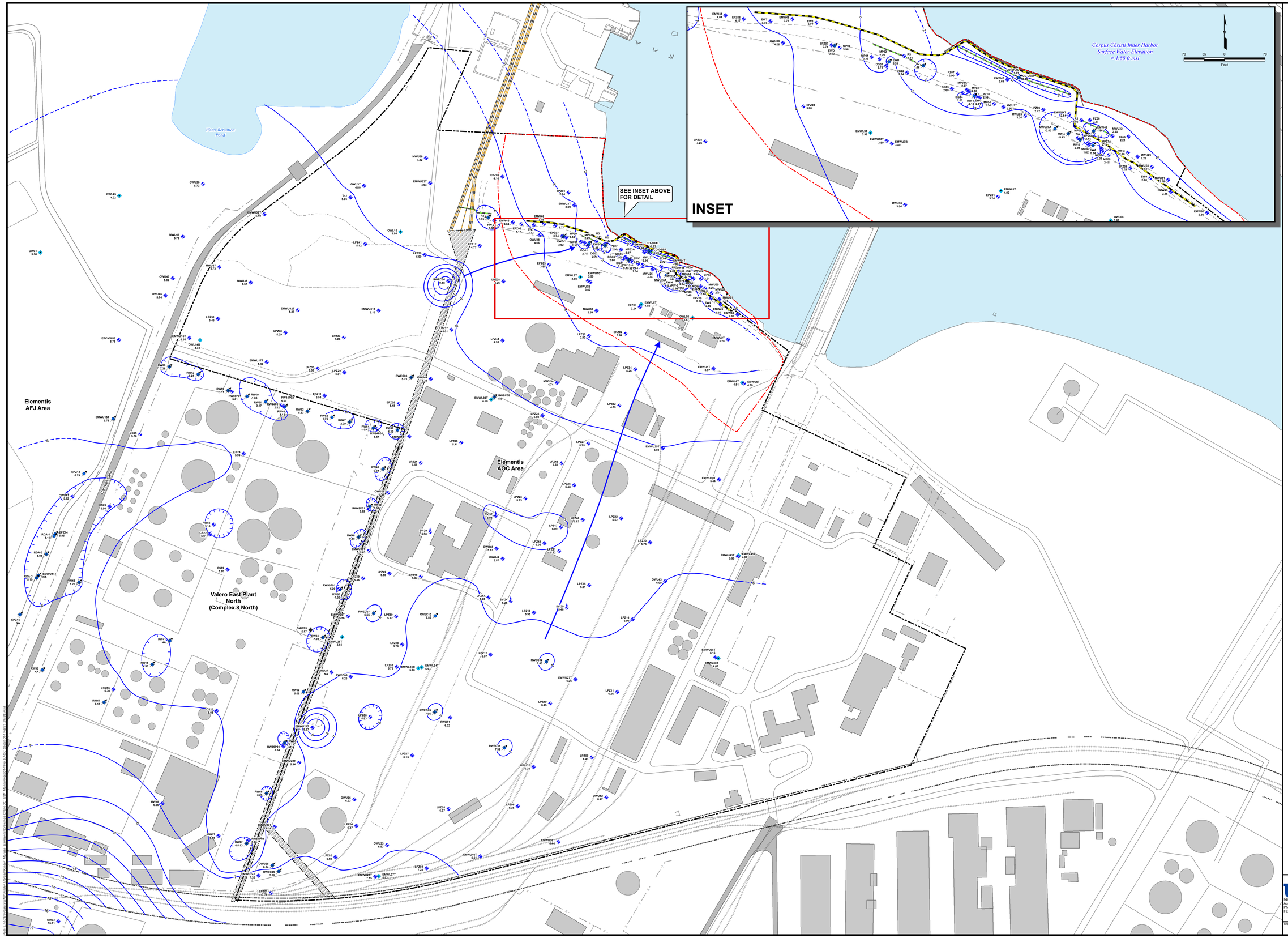
Report: AOC Annual Groundwater Monitoring Report

Title: **Potentiometric Surface of the 1st WBZ (April 2014)**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/11/2015	Fig 4 AOC GWE0414 WBZ1 24X36	4



Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Aboveground Pipeline
- Recovery Trench
- Potentiometric Surface Contour (Dashed Where Inferred) (ft msl)
- Approximate Groundwater Flow Direction
- Monitor Well Location (Upper WBZ)
- Monitor Well Location (Lower WBZ)
- Monitor Well Location (Lowest WBZ)
- Recovery Well Location (Upper WBZ)
- Soil Vapor Extraction Well (Upper WBZ)
- 9.33 Groundwater Elevation (ft msl)
- WBZ Water Bearing Zone

Notes:
1. Contour interval = 1 foot.
2. Data for wells on adjacent Valero property provided by DiSorbo Consulting, LLC.
3. Wells screened below the 1st WBZ were not included in the contouring of the 1st WBZ potentiometric surface.
4. Corpus Christi Inner Harbor water elevation based on average mean sea level recorded from 8 a.m. - 11 a.m. at the Texas State Aquarium TCOON Station.

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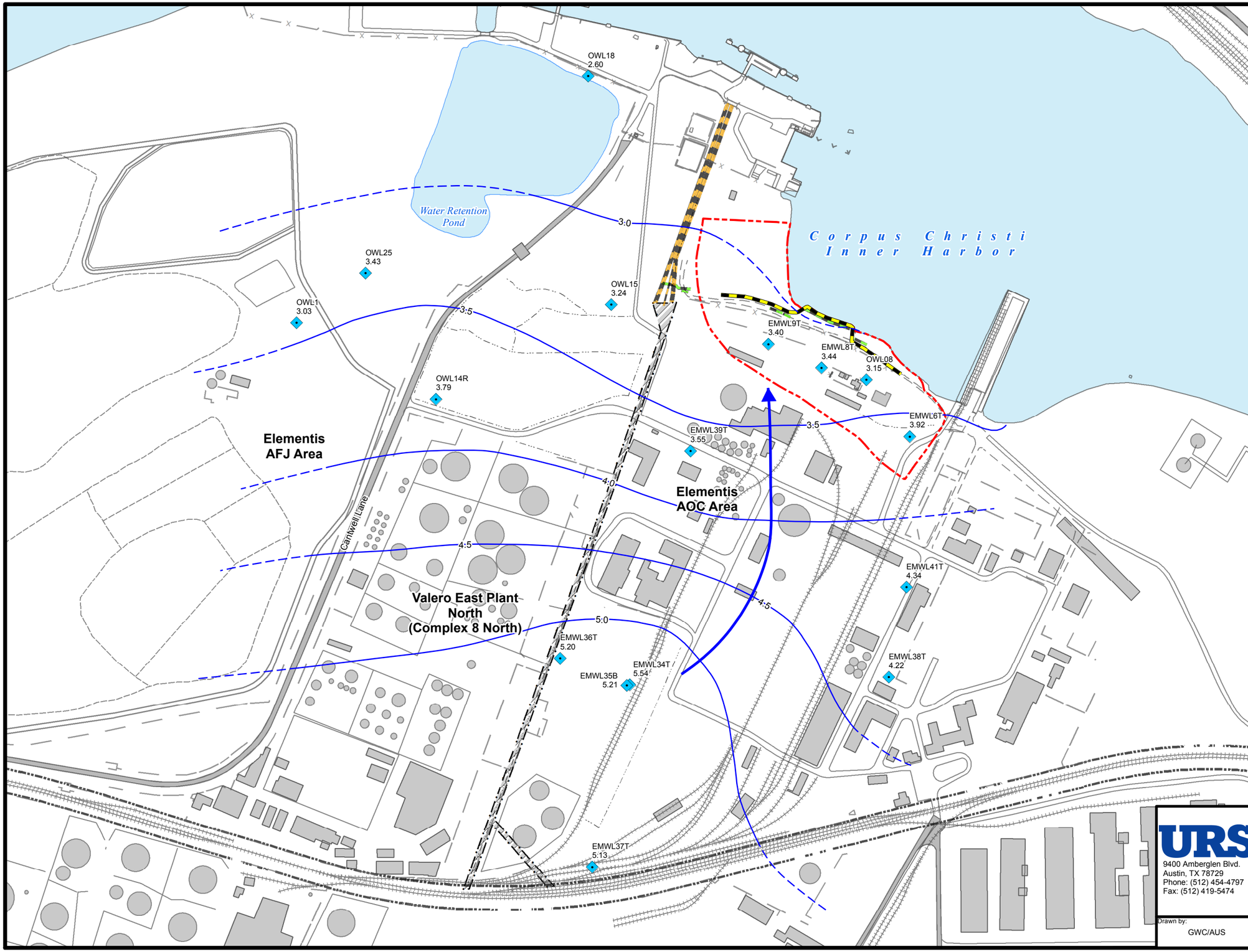
Report: AOC Annual Groundwater Monitoring Report

Title: **Potentiometric Surface of the 1st WBZ (October 2014)**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/11/2015	Fig 5 AOC GWE1014 WBZ1 24x36	5



Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Recovery Trench
- Aboveground Pipeline
- Approximate Groundwater Flow Direction
- Potentiometric Surface Contour (feet above mean sea level) (Dashed Where Inferred)
- Monitor Well Location (Lower WBZ)
- 3.43 Groundwater Elevation (ft msl)

Notes:
1. Contour interval = 0.5 ft.

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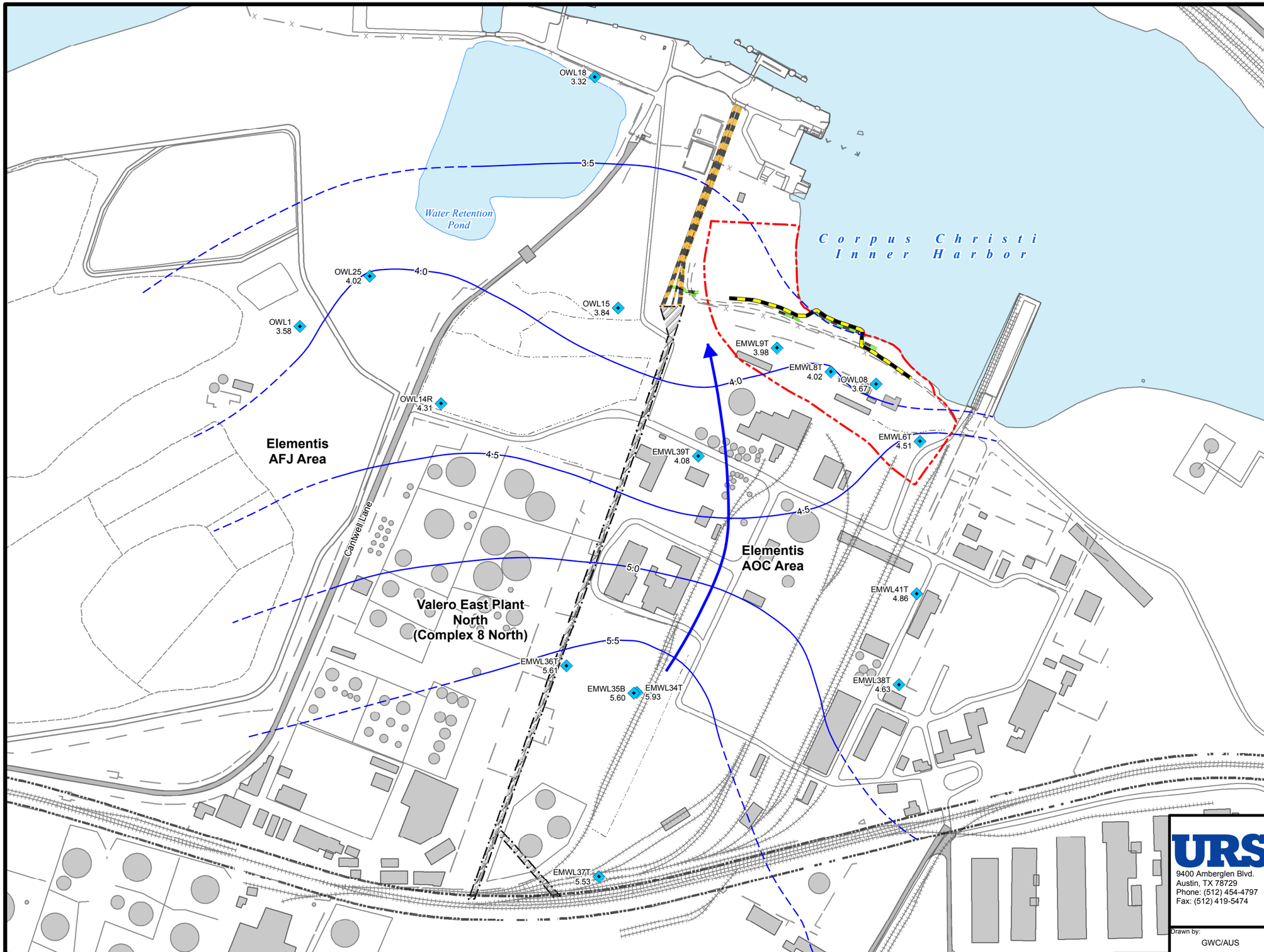
Title: **Potentiometric Surface of the 2nd WBZ (April 2014)**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/11/2015		6

Path: L:\AGE\Projects\ENV\Kinder Morgan\Kinder_Morgan_Elementis\Drawings-GIS\AOC_GW_Monitoring\2014\Fig 6 GWE 2WBZ 0414.mxd



Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Recovery Trench
- Aboveground Pipeline
- Approximate Groundwater Flow Direction
- Potentiometric Surface Contour (feet above mean sea level) (Dashed Where Inferred)
- Monitor Well Location (Lower WBZ)
- 3.43 Groundwater Elevation (ft msl)

Notes:
1. Contour interval = 0.5 ft.

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Title: **Potentiometric Surface of the 2nd WBZ (October 2014)**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/11/2015		7

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Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Aboveground Pipeline
- Recovery Trench
- Extent of Dissolved Phase Benzene Plume (0.0708 mg/L) (Dashed Where Inferred)
- Monitor Well Location (Upper WBZ)
- Monitor Well Location (Lower WBZ)
- Monitor Well Location (Deep WBZ)
- Soil Vapor Extraction Well
- Recovery Well Location (Upper WBZ)
- 2.55 LNAPL Thickness (feet)
- 5.81 Benzene Concentration (mg/L)
- WBZ Water Bearing Zone

LNAPL Thickness April, 2014

- 0-1'
- 1-2'
- 2-3'
- 3-4'
- 4-5'
- <5

Notes:

1. *Contour interval = 1 foot.*
2. *Data for wells on adjacent Valero property provided by DiSorbo Consulting, LLC.*
3. *Wells screened below the 1st WBZ were not included in the contouring of the 1st WBZ potentiometric surface.*
4. *All soil vapor extraction wells are shown on map, but not all were gauged for LNAPL*

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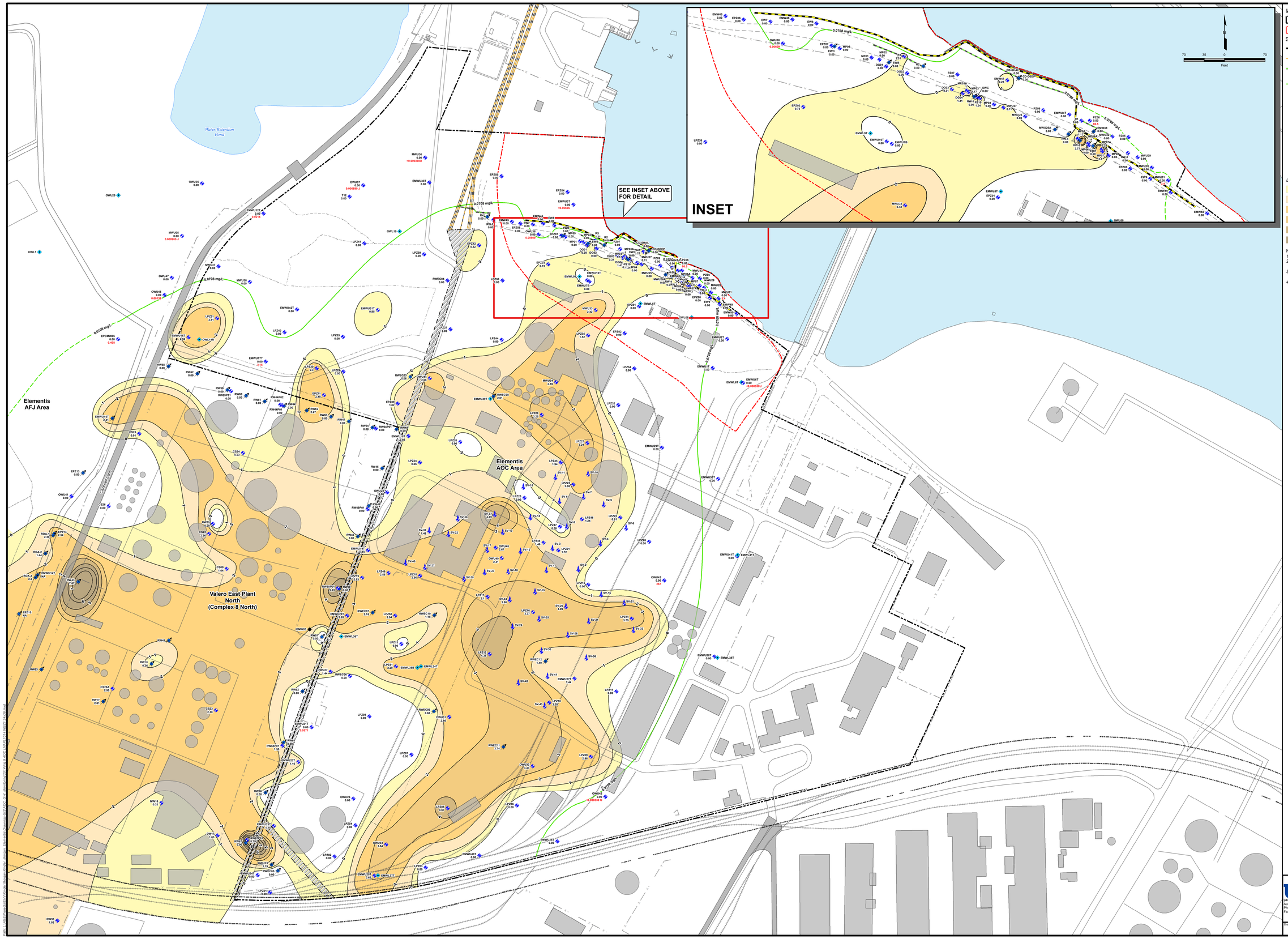
Title: **Extent of LNAPL in 1st WBZ (April 2014)**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/11/2015	Fig 8 AOC LNAPL0414 WBZ1 24x36	8



Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Aboveground Pipeline
- Recovery Trench
- Extent of Dissolved Phase Benzene Plume (0.0708 mg/L) (Dashed Where Inferred)
- Monitor Well Location (Upper WBZ)
- Monitor Well Location (Lower WBZ)
- Monitor Well Location (Deepest WBZ)
- Recovery Well Location (Upper WBZ)
- Soil Vapor Extraction Well Location (Upper WBZ)
- 2.55 LNAPL Thickness (feet)
- 2.55 Benzene Concentration (mg/L)
- WBZ Water Bearing Zone

LNAPL Thickness August, 2014

- 0-1'
- 1-2'
- 2-3'
- 3-4'
- 4-5'
- <5

Notes:

1. *Contour interval = 1 foot.*
2. *Data for wells on adjacent Valero property provided by DiSorbo Consulting, LLC.*
3. *Wells screened below the 1st WBZ were not included in the contouring of the 1st WBZ potentiometric surface.*
4. *All soil vapor extraction wells are shown on map, but not were gauged for LNAPL*

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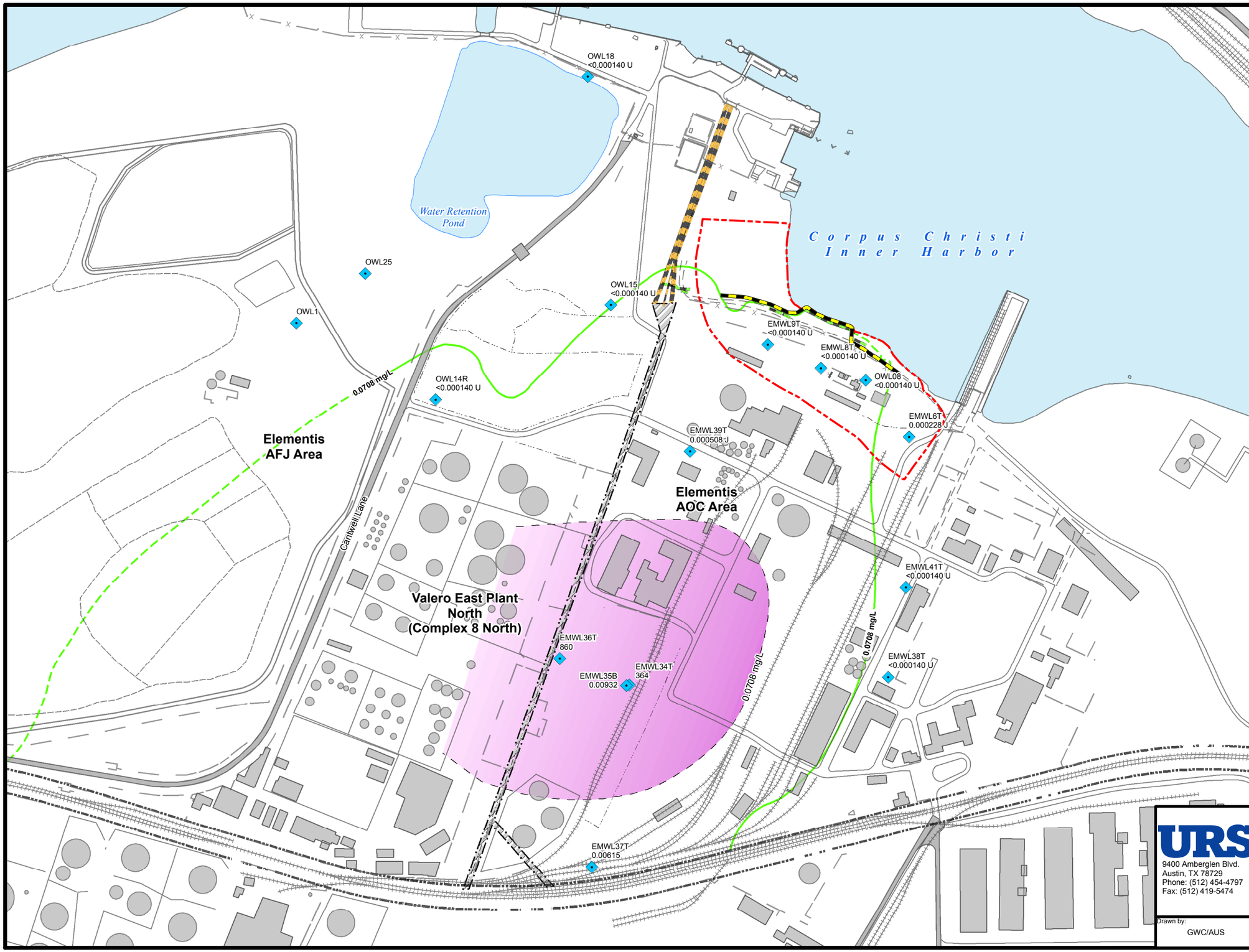
Project: AOC Annual Groundwater Monitoring Report

Title: **Extent of LNAPL in 1st WBZ (October 2014)**

Drawn by:	Date:	CD File:	Figure:
GWC/AUS	3/11/2015	Fig 9 AOC LNAPL1014 WBZ1 24x36	9



Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Estimated Extent of Dissolved Phase Benzene in 1st WBZ
- Estimated Extent of Dissolved Phase Benzene in 2nd WBZ
- Barrier Wall
- Recovery Trench
- Aboveground Pipeline
- Monitor Well Location (Lower WBZ)
- 1100 Benzene Concentration (mg/L)
- WBZ Water Bearing Zone

Notes:
1. *<0.00014 U: The analyte was analyzed for, but was not detected.*
2. *NA: Not analyzed*
3. *Analytical results are presented in Table 6.*

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Title: **Extent of Dissolved Phase Benzene in 2nd WBZ (April 2014)**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/11/2015		10

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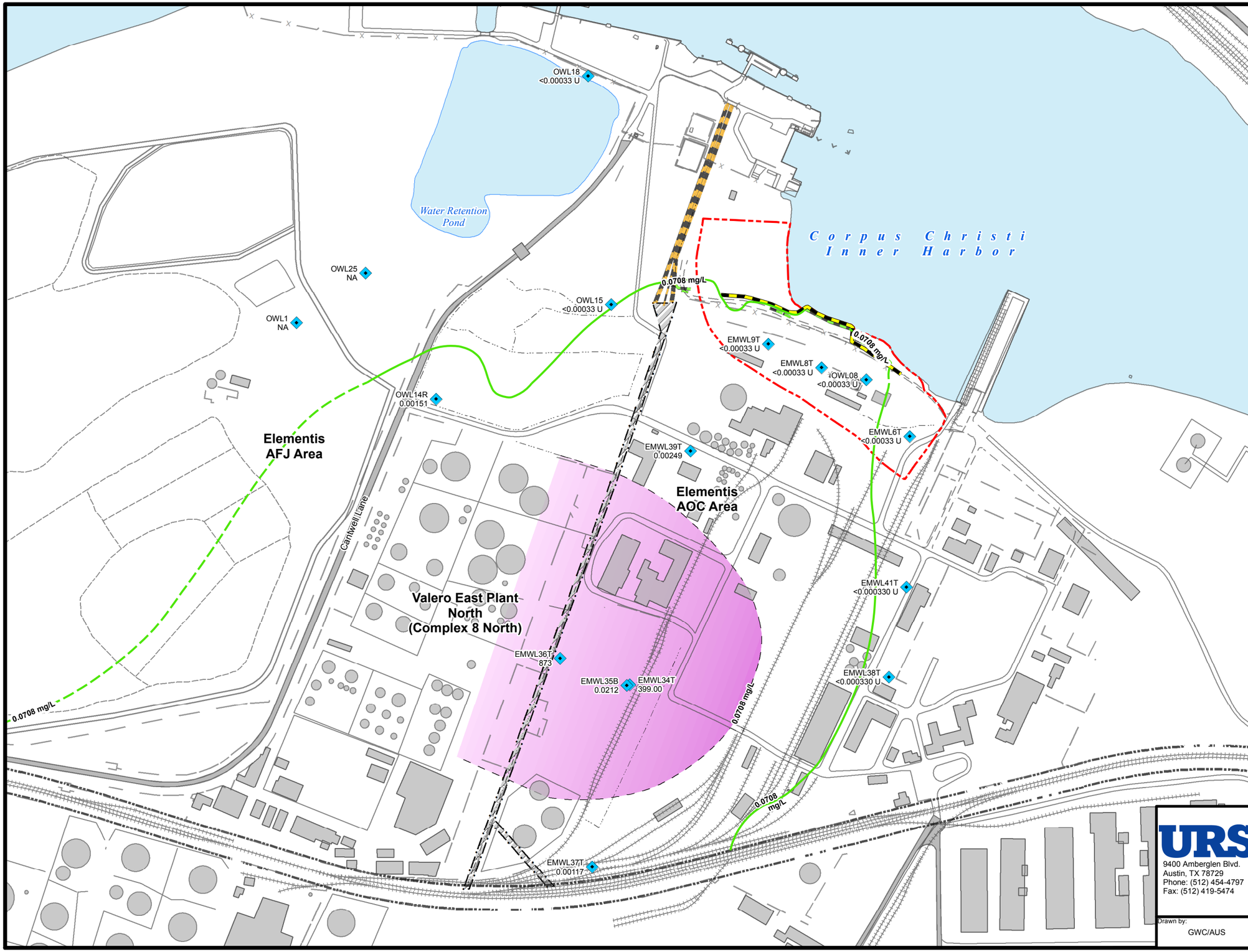

Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Estimated Extent of Dissolved Phase Benzene in 1st WBZ Above FRG of 0.0708 mg/L
- Estimated Extent of Dissolved Phase Benzene in 2nd WBZ Above FRG of 0.0708 mg/L
- Barrier Wall
- Recovery Trench
- Aboveground Pipeline
- 1100 Benzene Concentration (mg/L)
- WBZ Water Bearing Water Zone

Notes:
1. *<0.00014 U: The analyte was analyzed for, but was not detected.*
2. *NA: Not analyzed*
3. *Analytical results are presented in Table 6.*

STATE OF TEXAS
KEVIN PASTERNAK
GEOLOGY
2469
LICENSED
PROFESSIONAL GEOSCIENTIST
3/11/15

N

300 150 0 300
Feet

URS
9400 Amberglen Blvd.
Austin, TX 78729
Phone: (512) 454-4797
Fax: (512) 419-5474

Client: El Paso Merchant Energy-Petroleum Company
Elementis Site - Corpus Christi, Texas

Report: AOC Annual Groundwater Monitoring Report

Title: **Extent of Dissolved Phase Benzene in 2nd WBZ (October 2014)**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/11/2015		11

Path: L:\AGE\Projects\ENV\Kinder Morgan\Kinder_Morgan_Elementis\Drawings-GIS\AOC_GW_Monitoring\2014\Fig 11 DP Bena 2WBZ 1014.mxd

Appendix A

Data Usability Summaries and Laboratory Reports

DUS for the Semiannual AOC Groundwater Sampling Events
April 2014

Data Usability Summary for the AOC Semiannual Groundwater Sampling Event – April 2014

El Paso Merchant Energy-Petroleum Company/Elementis Chromium, L.P. Site
Corpus Christi, Texas

September 2014

Prepared for:
El Paso Corporation
Houston, Texas

Prepared by:
URS Corporation
9400 Amberglen Boulevard
Austin, Texas 78729

Data Usability Summary for the Semiannual AOC Groundwater Sampling Event –April 2014

This Data Usability Summary (DUS) describes the data quality for groundwater results from samples collected during the April 2014 Administrative Order on Consent (AOC) sampling event at the El Paso Merchant Energy-Petroleum Company (El Paso) Elementis Chromium, L.P. (Elementis) facility in Corpus Christi, Texas. During the sampling event, a total of 38 samples, 5 field duplicates, and 7 trip blanks were collected. The samples were collected from 16 April to 24 April 2014 and analyzed by TestAmerica Laboratories, Inc. (TestAmerica) in Corpus Christi, Texas. In addition, EMWU3T was resampled on 5 August 2014 to confirm the result.

Sample results were compared and evaluated using the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance, Texas Risk Reduction Program 13, May 2010 as guidance. Table 1 is a cross-reference of sample identifications (IDs), dates sampled, and methods used for analyses of groundwater samples. Data validation qualifiers are presented in Appendix A. Table A-1 presents organic analyses results. Copies of the laboratory reports are included in Appendix B.

Table 1. Cross-Reference of Sample and Laboratory IDs

Sample ID	Laboratory ID	Date Sampled	Benzene SW8260B
AOC-EMW49-0414	560-47001-6	4/24/2014	X
AOC-EMW50-0414-3	560-47001-7	4/24/2014	X
AOC-EMWL34T-0414	560-46973-3	4/22/2014	X
AOC-EMWL35B-0414	560-46973-1	4/22/2014	X
AOC-EMWL36T-0414	560-46973-4	4/22/2014	X
AOC-EMWL36T-0414-1	560-46973-5	4/22/2014	X
AOC-EMWL37T-0414	560-46903-1	4/21/2014	X
AOC-EMWL38T-0414	560-46903-3	4/21/2014	X
AOC-EMWL39T-0414	560-46919-5	4/22/2014	X
AOC-EMWL41T-0414	560-46903-4	4/21/2014	X
AOC-EMWL6T-0414	560-46903-5	4/21/2014	X
AOC-EMWL6T-0414-1	560-46903-6	4/21/2014	X
AOC-EMWL8T-0414	560-46919-3	4/22/2014	X
AOC-EMWL9T-0414	560-46919-4	4/22/2014	X
AOC-EMWU1T-0414	560-46832-2	4/17/2014	X
AOC-EMWU26T-0414	560-46801-4	4/16/2014	X
AOC-EMWU28T-0414	560-46801-5	4/16/2014	X
AOC-EMWU29T-0414	560-46801-8	4/16/2014	X
AOC-EMWU2T-0414	560-46854-5	4/18/2014	X
AOC-EMWU2T-0414-1	560-46854-6	4/18/2014	X
AOC-EMWU30T-0414	560-46801-7	4/16/2014	X
AOC-EMWU32T-0414	560-46832-4	4/17/2014	X
AOC-EMWU33T-0414	560-46832-5	4/17/2014	X
AOC-EMWU3T-0414	560-46854-3	4/18/2014	X
AOC-EMWU3T-0814	560-49105-1	8/5/2014	X
AOC-EMWU40T-0414	560-46801-2	4/16/2014	X
AOC-EMWU40T-0414-1	560-46801-3	4/16/2014	X
AOC-EMWU41T-0414	560-46801-6	4/16/2014	X
AOC-EMWU42T-0414	560-46973-8	4/23/2014	X

Sample ID	Laboratory ID	Date Sampled	Benzene SW8260B
AOC-EMWU6T-0414	560-46832-3	4/17/2014	X
AOC-EPZ04-0414-3	560-46854-1	4/18/2014	X
AOC-EPZ05-0414	560-46854-4	4/18/2014	X
AOC-LPZ40-0414	560-46973-7	4/23/2014	X
AOC-LPZ41-0414	560-46973-1	4/23/2014	X
AOC-LPZ41-0414-1	560-46973-1	4/23/2014	X
AOC-MWU28-0414	560-47001-4	4/24/2014	X
AOC-MWU31-0414	560-47001-5	4/24/2014	X
AOC-MWU36-0414	560-46973-1	4/23/2014	X
AOC-MWU37-0414-3	560-46973-1	4/23/2014	X
AOC-MWU38-0414	560-46973-9	4/23/2014	X
AOC-OWL08-0414	560-46919-2	4/22/2014	X
AOC-OWL14R-0414	560-46973-6	4/23/2014	X
AOC-PZ05-0414	560-47001-3	4/24/2014	X
AOC-PZ06-0414	560-46973-1	4/23/2014	X
Trip Blanks			
AOC-TB01	560-46801-1	4/16/2014	X
AOC-TB02	560-46832-1	4/17/2014	X
AOC-TB03	560-46854-2	4/18/2014	X
AOC-TB04	560-46973-2	4/22/2014	X
AOC-TB04	560-46903-2	4/21/2014	X
AOC-TB05	560-46919-1	4/22/2014	X
AOC-TB07	560-47001-2	4/24/2014	X
AOC-TB01-0814	560-49105-2	8/5/2014	X

Sample identifications (IDs) ending in -3 are client-specified matrix spike/matrix spike duplicate (MS/MSD) samples.
Sample IDs ending in -1 are field duplicates.
SW – U.S. Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, 1986 and subsequent revisions.

Data Usability Summary

The following information provides a summary of quality control (QC) results applied to the groundwater samples collected during the April 2014 AOC Semiannual Sampling Event. The data evaluation and validation results indicate that the data are acceptable and usable for this round of sampling. Results that were detected between the sample detection limits and method quantitation limits were qualified with "J" as estimated and are not discussed further.

Benzene by EPA Method SW8260B

Thirty-nine samples, five field duplicate samples, and eight trip blanks were analyzed for benzene by the U.S. Environmental Protection Agency (EPA) Method SW8260B. The QC requirements that were evaluated included sample receipt conditions, holding times, detection limits, calibrations, internal standards, blanks, laboratory control samples, matrix spike/matrix spike duplicate samples, surrogate spikes, and field duplicates. The laboratory-derived acceptance criteria were used to evaluate the data. The QC results indicate that the data are usable for their intended purpose.

Detection Limits

Several samples were diluted due to elevated non-target analyte concentrations. This resulted in elevated detection limits for those samples. No qualifications to the data were made.

APPENDIX A

Sample Results

Flag Definitions

J Estimated: The analyte was detected and positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

ND Not detected, no instrument response was recorded for the analyte.

U Not detected: analysis for the analyte was performed, but the analyte was not detected above the level of the associated value. The associated value is the detection limit. A positive result with a “U” qualifier has been flagged due to blank contamination.

Table A-1

Organic Analysis Results

SITE ID	EP	EP	OffELM_O	OffELM_O
LOCATION ID	EMW-49	EMW-50	EMW-L34T	EMW-L35B
SAMPLE ID	AOC-EMW49-0414	AOC-EMW50-0414-3	AOC-EMWL34T-0414	AOC-EMWL35B-0414
DATE SAMPLED	24-APR-14	24-APR-14	22-APR-14	22-APR-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.140)[1]	ND U (0.140)[1]	364000 (700)[5000]	9.32 (0.140)[1]

Compiled: 09/16/14 () = Detection Limit [] = Dilution Factor ND = Not Detected NA = Not Applicable * - Value considered suspect, Refer to QC Report

SITE ID	OffELM_O	OffELM_O	OffELM_O	OffELM_O
LOCATION ID	EMW-L36T	EMW-L36T	EMW-L37T	EMW-L38T
SAMPLE ID	AOC-EMWL36T-0414	AOC-EMWL36T-0414-1 Dup of AOC-EMWL36T-0414	AOC-EMWL37T-0414	AOC-EMWL38T-0414
DATE SAMPLED	22-APR-14	22-APR-14	21-APR-14	21-APR-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	860000 (1400)[10000]	896000 (1400)[10000]	6.15 (0.140)[1]	ND U (0.140)[1]

SITE ID	OffELM_O	EP	EP	EP
LOCATION ID	EMW-L39T	EMW-L41T	EMW-L6T	EMW-L6T
SAMPLE ID	AOC-EMWL39T-0414	AOC-EMWL41T-0414	AOC-EMWL6T-0414	AOC-EMWL6T-0414-1 Dup of AOC-EMWL6T-0414
DATE SAMPLED	22-APR-14	21-APR-14	21-APR-14	21-APR-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	0.508 J (0.140)[1]	ND U (0.140)[1]	0.228 J (0.140)[1]	0.209 J (0.140)[1]

	SITE ID			
	LOCATION ID			
	SAMPLE ID			
	DATE SAMPLED			
PARAMETER	OffELM_O EMW-L8T AOC-EMWL8T-0414 22-APR-14	OffELM_O EMW-L9T AOC-EMWL9T-0414 22-APR-14	OffELM_O EMW-U1T AOC-EMWU1T-0414 17-APR-14	OffELM_O EMW-U26T AOC-EMWU26T-0414 16-APR-14
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.140)[1]	ND U (0.140)[1]	ND U (0.140)[1]	ND U (0.140)[1]

	SITE ID			
	LOCATION ID			
	SAMPLE ID			
	DATE SAMPLED			
PARAMETER	OffELM_O EMW-U28T AOC-EMWU28T-0414 16-APR-14	OffELM_O EMW-U29T AOC-EMWU29T-0414 16-APR-14	OffELM_O EMW-U2T AOC-EMWU2T-0414 18-APR-14	OffELM_O EMW-U2T AOC-EMWU2T-0414-1 Dup of AOC-EMWU2T-0414 18-APR-14
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.140)[1]	148000 (280)[2000]	ND U (0.140)[1]	ND U (0.140)[1]

SITE ID	OffELM_O	OffELM_O	OffELM_O	OffELM_O
LOCATION ID	EMW-U30T	EMW-U32T	EMW-U33T	EMW-U3T
SAMPLE ID	AOC-EMWU30T-0414	AOC-EMWU32T-0414	AOC-EMWU33T-0414	AOC-EMWU3T-0414
DATE SAMPLED	16-APR-14	17-APR-14	17-APR-14	18-APR-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.140)[1]	16.2 (0.700)[5]	ND U (70.0)[500]	2650 (14.0)[100]

SITE ID	OffELM_O	EP	EP	EP
LOCATION ID	EMW-U3T	EMW-U40T	EMW-U40T	EMW-U41T
SAMPLE ID	AOC-EMWU3T-0814	AOC-EMWU40T-0414	AOC-EMWU40T-0414-1 Dup of AOC-EMWU40T-0414	AOC-EMWU41T-0414
DATE SAMPLED	05-AUG-14	16-APR-14	16-APR-14	16-APR-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (2.80)[20]	16500 (140)[1000]	15100 (140)[1000]	ND U (0.140)[1]

	SITE ID			
	LOCATION ID			
	SAMPLE ID			
	DATE SAMPLED			
PARAMETER	EP	OffELP_O	OffELM_O	OffELM_O
	EMW-U42T	EMW-U6T	EPZ-04	EPZ-05
	AOC-EMWU42T-0414	AOC-EMWU6T-0414	AOC-EPZ04-0414-3	AOC-EPZ05-0414
	23-APR-14	17-APR-14	18-APR-14	18-APR-14
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.700)[5]	ND U (0.140)[1]	ND U (0.140)[1]	ND U (0.140)[1]

SITE ID	EP	EP	EP	OffELM_O
LOCATION ID	LPZ40	LPZ41	LPZ41	MWU28
SAMPLE ID	AOC-LPZ40-0414	AOC-LPZ41-0414	AOC-LPZ41-0414-1 Dup of AOC-LPZ41-0414	AOC-MWU28-0414
DATE SAMPLED	23-APR-14	23-APR-14	23-APR-14	24-APR-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.700)[5]	0.718 J (0.140)[1]	0.668 J (0.140)[1]	ND U (0.140)[1]

	SITE ID											
	LOCATION ID											
	SAMPLE ID											
	DATE SAMPLED											
	OffELM_O			OffELM_O			OffELM_O			OffELM_O		
	MW-U31			MWU36			MWU37			MW-U38		
	AOC-MWU31-0414			AOC-MWU36-0414			AOC-MWU37-0414-3			AOC-MWU38-0414		
	24-APR-14			23-APR-14			23-APR-14			23-APR-14		
PARAMETER												
SW8260B - Volatile Organic Compounds (ug/L)												
Benzene	8420	(14.0	)[100]	ND	U (14.0	)[100]	ND	U (0.140	)[1]	22.9	(0.700	)[5]

SITE ID	OffELM_O	OffELM_O	OffELM_O	OffELM_O
LOCATION ID	OW-L08	OW-L14R	PZ-05	PZ-06
SAMPLE ID	AOC-OWL08-0414	AOC-OWL14R-0414	AOC-PZ05-0414	AOC-PZ06-0414
DATE SAMPLED	22-APR-14	23-APR-14	24-APR-14	23-APR-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.140)[1]	ND U (0.140)[1]	ND U (0.140)[1]	124000 (280)[2000

APPENDIX B

Laboratory Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-46801-1
Client Project/Site: Elementis AOC Groundwater

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
5/15/2014 3:32:22 PM
Sophia Shah, Project Management Assistant I
sophia.shah@testamericainc.com

Designee for

Neal Salcher, Senior Project Manager
neal.salcher@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

General Chemistry

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 560-46801-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-46801-1

Comments
No additional comments.

Receipt
The samples were received on 4/16/2014 4:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 0.5º C.

Detection Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Client Sample ID: AOC-TB01 — Lab Sample ID: 560-46801-1

No Detections.

Client Sample ID: AOC-EMWU40T-0414 — Lab Sample ID: 560-46801-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	16500		1000	140	ug/L	1000		8260B	Total/NA
Chloride	2240		100	19.2	mg/L	100		300.0	Total/NA
Sulfate	971		500	189	mg/L	500		300.0	Total/NA
Sulfide	0.435		0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	1020		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	1020		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Ferrous Iron	0.476	HF	0.200	0.0220	mg/L	1		SM 3500 FE D	Total/NA

Client Sample ID: AOC-EMWU40T-0414-1 — Lab Sample ID: 560-46801-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	15100		1000	140	ug/L	1000		8260B	Total/NA

Client Sample ID: AOC-EMWU26T-0414 — Lab Sample ID: 560-46801-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	1090		50.0	9.60	mg/L	50		300.0	Total/NA
Sulfate	1170		500	189	mg/L	500		300.0	Total/NA
Total Alkalinity as CaCO3	475		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	475		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Ferrous Iron	0.0640	J HF	0.200	0.0220	mg/L	1		SM 3500 FE D	Total/NA

Client Sample ID: AOC-EMWU28T-0414 — Lab Sample ID: 560-46801-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	190		5.00	0.960	mg/L	5		300.0	Total/NA
Sulfate	183		50.0	18.9	mg/L	50		300.0	Total/NA
Total Alkalinity as CaCO3	524		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	524		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Ferrous Iron	0.0260	J HF	0.200	0.0220	mg/L	1		SM 3500 FE D	Total/NA

Client Sample ID: AOC-EMWU41T-0414 — Lab Sample ID: 560-46801-6

No Detections.

Client Sample ID: AOC-EMWU30T-0414 — Lab Sample ID: 560-46801-7

No Detections.

Client Sample ID: AOC-EMWU29T-0414 — Lab Sample ID: 560-46801-8

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	148000		2000	280	ug/L	2000		8260B	Total/NA
Chloride	2130		100	19.2	mg/L	100		300.0	Total/NA
Sulfate	1400		500	189	mg/L	500		300.0	Total/NA
Total Alkalinity as CaCO3	3320		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	3260		5.00	5.00	mg/L	1		SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Client Sample ID: AOC-EMWU29T-0414 (Continued)

Lab Sample ID: 560-46801-8

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Carbonate Alkalinity as CaCO3	60.0		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Phenolphthalein Alkalinity	30.0		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Ferrous Iron	0.0880	J HF	0.200	0.0220	mg/L	1		SM 3500 FE D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Client Sample ID: AOC-TB01

Lab Sample ID: 560-46801-1
Date Collected: 04/16/14 09:00
Matrix: Water
Date Received: 04/16/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/17/14 17:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/17/14 17:27*	*1*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*		*04/17/14 17:27*	*1*
Dibromofluoromethane (Surr)	*97*		*69 - 130*		*04/17/14 17:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 140*		*04/17/14 17:27*	*1*

Client Sample ID: AOC-EMWU40T-0414

Lab Sample ID: 560-46801-2
Date Collected: 04/16/14 10:25
Matrix: Water
Date Received: 04/16/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**16500**		1000	140	ug/L			04/17/14 17:53	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/17/14 17:53*	*1000*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*		*04/17/14 17:53*	*1000*
Dibromofluoromethane (Surr)	*98*		*69 - 130*		*04/17/14 17:53*	*1000*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 140*		*04/17/14 17:53*	*1000*

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**2240**		100	19.2	mg/L			04/19/14 21:54	100
Nitrate as N	1.03	U	5.00	1.03	mg/L			04/17/14 18:56	10
Nitrite as N	2.00	U	5.00	2.00	mg/L			04/17/14 18:56	10
Sulfate	**971**		500	189	mg/L			04/24/14 14:06	500
Sulfide	**0.435**		0.0500	0.0131	mg/L			04/22/14 09:30	1
Total Alkalinity as CaCO3	**1020**		5.00	5.00	mg/L			04/29/14 11:35	1
Bicarbonate Alkalinity as CaCO3	**1020**		5.00	5.00	mg/L			04/29/14 11:35	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			04/29/14 11:35	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			04/29/14 11:35	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			04/29/14 11:35	1
Ferrous Iron	**0.476**	**HF**	0.200	0.0220	mg/L			04/17/14 11:00	1

Client Sample ID: AOC-EMWU40T-0414-1

Lab Sample ID: 560-46801-3
Date Collected: 04/16/14 10:25
Matrix: Water
Date Received: 04/16/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**15100**		1000	140	ug/L			04/17/14 18:18	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/17/14 18:18*	*1000*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*		*04/17/14 18:18*	*1000*
Dibromofluoromethane (Surr)	*98*		*69 - 130*		*04/17/14 18:18*	*1000*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 140*		*04/17/14 18:18*	*1000*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Client Sample ID: AOC-EMWU26T-0414

Lab Sample ID: 560-46801-4

Date Collected: 04/16/14 11:45
Matrix: Water
Date Received: 04/16/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/17/14 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*04/17/14 19:09*	*1*
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*		*04/17/14 19:09*	*1*
Dibromofluoromethane (Surr)	*95*		*69 - 130*		*04/17/14 19:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 140*		*04/17/14 19:09*	*1*

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1090**		50.0	9.60	mg/L			04/19/14 22:16	50
Nitrate as N	0.515	U	2.50	0.515	mg/L			04/17/14 19:18	5
Nitrite as N	1.00	U	2.50	1.00	mg/L			04/17/14 19:18	5
Sulfate	**1170**		500	189	mg/L			04/24/14 14:28	500
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/22/14 09:30	1
Total Alkalinity as CaCO3	**475**		5.00	5.00	mg/L			04/29/14 11:35	1
Bicarbonate Alkalinity as CaCO3	**475**		5.00	5.00	mg/L			04/29/14 11:35	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			04/29/14 11:35	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			04/29/14 11:35	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			04/29/14 11:35	1
Ferrous Iron	**0.0640**	**J HF**	0.200	0.0220	mg/L			04/17/14 11:00	1

Client Sample ID: AOC-EMWU28T-0414

Lab Sample ID: 560-46801-5

Date Collected: 04/16/14 13:40
Matrix: Water
Date Received: 04/16/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/17/14 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*04/17/14 19:34*	*1*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*		*04/17/14 19:34*	*1*
Dibromofluoromethane (Surr)	*101*		*69 - 130*		*04/17/14 19:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 140*		*04/17/14 19:34*	*1*

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**190**		5.00	0.960	mg/L			04/19/14 22:38	5
Nitrate as N	0.206	U	1.00	0.206	mg/L			04/17/14 19:40	2
Nitrite as N	0.400	U	1.00	0.400	mg/L			04/17/14 19:40	2
Sulfate	**183**		50.0	18.9	mg/L			04/24/14 14:50	50
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/22/14 09:30	1
Total Alkalinity as CaCO3	**524**		5.00	5.00	mg/L			04/29/14 11:35	1
Bicarbonate Alkalinity as CaCO3	**524**		5.00	5.00	mg/L			04/29/14 11:35	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			04/29/14 11:35	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			04/29/14 11:35	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			04/29/14 11:35	1
Ferrous Iron	**0.0260**	**J HF**	0.200	0.0220	mg/L			04/17/14 11:00	1

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Client Sample ID: AOC-EMWU41T-0414

Lab Sample ID: 560-46801-6
Date Collected: 04/16/14 14:25
Matrix: Water
Date Received: 04/16/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/17/14 20:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/17/14 20:00*	*1*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*		*04/17/14 20:00*	*1*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*04/17/14 20:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 140*		*04/17/14 20:00*	*1*

Client Sample ID: AOC-EMWU30T-0414

Lab Sample ID: 560-46801-7
Date Collected: 04/16/14 15:15
Matrix: Water
Date Received: 04/16/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/17/14 20:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*70 - 130*		*04/17/14 20:25*	*1*
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*		*04/17/14 20:25*	*1*
Dibromofluoromethane (Surr)	*98*		*69 - 130*		*04/17/14 20:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 140*		*04/17/14 20:25*	*1*

Client Sample ID: AOC-EMWU29T-0414

Lab Sample ID: 560-46801-8
Date Collected: 04/16/14 15:55
Matrix: Water
Date Received: 04/16/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**148000**		2000	280	ug/L			04/18/14 12:39	2000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/18/14 12:39*	*2000*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*		*04/18/14 12:39*	*2000*
Dibromofluoromethane (Surr)	*100*		*69 - 130*		*04/18/14 12:39*	*2000*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 140*		*04/18/14 12:39*	*2000*

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**2130**		100	19.2	mg/L			04/19/14 23:00	100
Nitrate as N	2.06	U	10.0	2.06	mg/L			04/17/14 20:02	20
Nitrite as N	4.00	U	10.0	4.00	mg/L			04/17/14 20:02	20
Sulfate	**1400**		500	189	mg/L			04/24/14 17:02	500
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/22/14 09:30	1
Total Alkalinity as CaCO3	**3320**		5.00	5.00	mg/L			04/29/14 11:35	1
Bicarbonate Alkalinity as CaCO3	**3260**		5.00	5.00	mg/L			04/29/14 11:35	1
Carbonate Alkalinity as CaCO3	**60.0**		5.00	5.00	mg/L			04/29/14 11:35	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			04/29/14 11:35	1
Phenolphthalein Alkalinity	**30.0**		5.00	5.00	mg/L			04/29/14 11:35	1
Ferrous Iron	**0.0880**	**J HF**	0.200	0.0220	mg/L			04/17/14 11:00	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 560-100968/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 100968

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/17/14 16:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/17/14 16:37*	*1*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*		*04/17/14 16:37*	*1*
Dibromofluoromethane (Surr)	*100*		*69 - 130*		*04/17/14 16:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 140*		*04/17/14 16:37*	*1*

Lab Sample ID: LCS 560-100968/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 100968

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	22.88		ug/L		92	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*70 - 130*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*
Dibromofluoromethane (Surr)	*104*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 140*

Lab Sample ID: MB 560-101004/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101004

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/18/14 10:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/18/14 10:57*	*1*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*		*04/18/14 10:57*	*1*
Dibromofluoromethane (Surr)	*100*		*69 - 130*		*04/18/14 10:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 140*		*04/18/14 10:57*	*1*

Lab Sample ID: LCS 560-101004/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101004

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	22.50		ug/L		90	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*70 - 130*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 140*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 560-101011/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101011

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.192	U	1.00	0.192	mg/L			04/17/14 13:04	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/17/14 13:04	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/17/14 13:04	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/17/14 13:04	1

Lab Sample ID: LCS 560-101011/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101011

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.751		mg/L		98	90 - 110
Nitrate as N	5.00	4.922		mg/L		98	90 - 110
Nitrite as N	5.00	5.085		mg/L		102	90 - 110
Sulfate	20.0	19.70		mg/L		98	90 - 110

Lab Sample ID: MB 560-101084/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101084

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.192	U	1.00	0.192	mg/L			04/19/14 18:35	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/19/14 18:35	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/19/14 18:35	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/19/14 18:35	1

Lab Sample ID: LCS 560-101084/5 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101084

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.20		mg/L		102	90 - 110
Nitrate as N	5.00	5.178		mg/L		104	90 - 110
Nitrite as N	5.00	5.353		mg/L		107	90 - 110
Sulfate	20.0	21.10		mg/L		106	90 - 110

Lab Sample ID: MB 560-101272/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.8180	J	1.00	0.192	mg/L			04/24/14 11:10	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/24/14 11:10	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/24/14 11:10	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/24/14 11:10	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 560-101272/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.886		mg/L		99	90 - 110
Nitrate as N	5.00	4.989		mg/L		100	90 - 110
Nitrite as N	5.00	4.957		mg/L		99	90 - 110
Sulfate	20.0	20.56		mg/L		103	90 - 110

Method: 376.2 - Sulfide

Lab Sample ID: MB 560-101191/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/22/14 09:30	1

Lab Sample ID: LCS 560-101191/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.501	0.5000		mg/L		100	80 - 120

Method: SM 2320B - Alkalinity

Lab Sample ID: LCS 560-101444/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101444

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	100	98.00		mg/L		98	85 - 115

Lab Sample ID: LCS 560-101444/17 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101444

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	100	98.00		mg/L		98	85 - 115

Method: SM 3500 FE D - Iron, Ferrous

Lab Sample ID: MB 560-101348/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101348

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Ferrous Iron	0.0220	U	0.200	0.0220	mg/L			04/17/14 11:00	1

Method: SM 3500 FE D - Iron, Ferrous (Continued)

Lab Sample ID: LCS 560-101348/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101348

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ferrous Iron			0.800	0.8230		mg/L		103	80 - 120		

Lab Sample ID: 560-46801-4 MS — **Client Sample ID: AOC-EMWU26T-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101348

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ferrous Iron	0.0640	J HF	0.800	0.8760		mg/L		102	75 - 125		

Lab Sample ID: 560-46801-4 MSD — **Client Sample ID: AOC-EMWU26T-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101348

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ferrous Iron	0.0640	J HF	0.800	0.8830		mg/L		102	75 - 125	1	20

QC Association Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

GC/MS VOA

Analysis Batch: 100968

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46801-1	AOC-TB01	Total/NA	Water	8260B	
560-46801-2	AOC-EMWU40T-0414	Total/NA	Water	8260B	
560-46801-3	AOC-EMWU40T-0414-1	Total/NA	Water	8260B	
560-46801-4	AOC-EMWU26T-0414	Total/NA	Water	8260B	
560-46801-5	AOC-EMWU28T-0414	Total/NA	Water	8260B	
560-46801-6	AOC-EMWU41T-0414	Total/NA	Water	8260B	
560-46801-7	AOC-EMWU30T-0414	Total/NA	Water	8260B	
LCS 560-100968/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-100968/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 101004

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46801-8	AOC-EMWU29T-0414	Total/NA	Water	8260B	
LCS 560-101004/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-101004/8	Method Blank	Total/NA	Water	8260B	

General Chemistry

Analysis Batch: 101011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46801-2	AOC-EMWU40T-0414	Total/NA	Water	300.0	
560-46801-4	AOC-EMWU26T-0414	Total/NA	Water	300.0	
560-46801-5	AOC-EMWU28T-0414	Total/NA	Water	300.0	
560-46801-8	AOC-EMWU29T-0414	Total/NA	Water	300.0	
LCS 560-101011/4	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101011/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 101084

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46801-2	AOC-EMWU40T-0414	Total/NA	Water	300.0	
560-46801-4	AOC-EMWU26T-0414	Total/NA	Water	300.0	
560-46801-5	AOC-EMWU28T-0414	Total/NA	Water	300.0	
560-46801-8	AOC-EMWU29T-0414	Total/NA	Water	300.0	
LCS 560-101084/5	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101084/4	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 101191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46801-2	AOC-EMWU40T-0414	Total/NA	Water	376.2	
560-46801-4	AOC-EMWU26T-0414	Total/NA	Water	376.2	
560-46801-5	AOC-EMWU28T-0414	Total/NA	Water	376.2	
560-46801-8	AOC-EMWU29T-0414	Total/NA	Water	376.2	
LCS 560-101191/4	Lab Control Sample	Total/NA	Water	376.2	
MB 560-101191/3	Method Blank	Total/NA	Water	376.2	

Analysis Batch: 101272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46801-2	AOC-EMWU40T-0414	Total/NA	Water	300.0	
560-46801-4	AOC-EMWU26T-0414	Total/NA	Water	300.0	
560-46801-5	AOC-EMWU28T-0414	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 101272 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46801-8	AOC-EMWU29T-0414	Total/NA	Water	300.0	
LCS 560-101272/4	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101272/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 101348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46801-2	AOC-EMWU40T-0414	Total/NA	Water	SM 3500 FE D	
560-46801-4	AOC-EMWU26T-0414	Total/NA	Water	SM 3500 FE D	
560-46801-4 MS	AOC-EMWU26T-0414	Total/NA	Water	SM 3500 FE D	
560-46801-4 MSD	AOC-EMWU26T-0414	Total/NA	Water	SM 3500 FE D	
560-46801-5	AOC-EMWU28T-0414	Total/NA	Water	SM 3500 FE D	
560-46801-8	AOC-EMWU29T-0414	Total/NA	Water	SM 3500 FE D	
LCS 560-101348/4	Lab Control Sample	Total/NA	Water	SM 3500 FE D	
MB 560-101348/3	Method Blank	Total/NA	Water	SM 3500 FE D	

Analysis Batch: 101444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46801-2	AOC-EMWU40T-0414	Total/NA	Water	SM 2320B	
560-46801-4	AOC-EMWU26T-0414	Total/NA	Water	SM 2320B	
560-46801-5	AOC-EMWU28T-0414	Total/NA	Water	SM 2320B	
560-46801-8	AOC-EMWU29T-0414	Total/NA	Water	SM 2320B	
LCS 560-101444/1	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 560-101444/17	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Client Sample ID: AOC-TB01 — Lab Sample ID: 560-46801-1

Date Collected: 04/16/14 09:00 — **Matrix: Water**
Date Received: 04/16/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100968	04/17/14 17:27	RJT	TAL CC

Client Sample ID: AOC-EMWU40T-0414 — Lab Sample ID: 560-46801-2

Date Collected: 04/16/14 10:25 — **Matrix: Water**
Date Received: 04/16/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1000	100968	04/17/14 17:53	RJT	TAL CC
Total/NA	Analysis	300.0		10	101011	04/17/14 18:56	JEM	TAL CC
Total/NA	Analysis	300.0		100	101084	04/19/14 21:54	HMZ	TAL CC
Total/NA	Analysis	300.0		500	101272	04/24/14 14:06	JEM	TAL CC
Total/NA	Analysis	376.2		1	101191	04/22/14 09:30	HMZ	TAL CC
Total/NA	Analysis	SM 2320B		1	101444	04/29/14 11:35	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101348	04/17/14 11:00	LPO	TAL CC

Client Sample ID: AOC-EMWU40T-0414-1 — Lab Sample ID: 560-46801-3

Date Collected: 04/16/14 10:25 — **Matrix: Water**
Date Received: 04/16/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1000	100968	04/17/14 18:18	RJT	TAL CC

Client Sample ID: AOC-EMWU26T-0414 — Lab Sample ID: 560-46801-4

Date Collected: 04/16/14 11:45 — **Matrix: Water**
Date Received: 04/16/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100968	04/17/14 19:09	RJT	TAL CC
Total/NA	Analysis	300.0		5	101011	04/17/14 19:18	JEM	TAL CC
Total/NA	Analysis	300.0		50	101084	04/19/14 22:16	HMZ	TAL CC
Total/NA	Analysis	300.0		500	101272	04/24/14 14:28	JEM	TAL CC
Total/NA	Analysis	376.2		1	101191	04/22/14 09:30	HMZ	TAL CC
Total/NA	Analysis	SM 2320B		1	101444	04/29/14 11:35	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101348	04/17/14 11:00	LPO	TAL CC

Client Sample ID: AOC-EMWU28T-0414 — Lab Sample ID: 560-46801-5

Date Collected: 04/16/14 13:40 — **Matrix: Water**
Date Received: 04/16/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100968	04/17/14 19:34	RJT	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Client Sample ID: AOC-EMWU28T-0414 — Lab Sample ID: 560-46801-5

Date Collected: 04/16/14 13:40 — **Matrix: Water**
Date Received: 04/16/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		2	101011	04/17/14 19:40	JEM	TAL CC
Total/NA	Analysis	300.0		5	101084	04/19/14 22:38	HMZ	TAL CC
Total/NA	Analysis	300.0		50	101272	04/24/14 14:50	JEM	TAL CC
Total/NA	Analysis	376.2		1	101191	04/22/14 09:30	HMZ	TAL CC
Total/NA	Analysis	SM 2320B		1	101444	04/29/14 11:35	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101348	04/17/14 11:00	LPO	TAL CC

Client Sample ID: AOC-EMWU41T-0414 — Lab Sample ID: 560-46801-6

Date Collected: 04/16/14 14:25 — **Matrix: Water**
Date Received: 04/16/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100968	04/17/14 20:00	RJT	TAL CC

Client Sample ID: AOC-EMWU30T-0414 — Lab Sample ID: 560-46801-7

Date Collected: 04/16/14 15:15 — **Matrix: Water**
Date Received: 04/16/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100968	04/17/14 20:25	RJT	TAL CC

Client Sample ID: AOC-EMWU29T-0414 — Lab Sample ID: 560-46801-8

Date Collected: 04/16/14 15:55 — **Matrix: Water**
Date Received: 04/16/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2000	101004	04/18/14 12:39	RJT	TAL CC
Total/NA	Analysis	300.0		20	101011	04/17/14 20:02	JEM	TAL CC
Total/NA	Analysis	300.0		100	101084	04/19/14 23:00	HMZ	TAL CC
Total/NA	Analysis	300.0		500	101272	04/24/14 17:02	JEM	TAL CC
Total/NA	Analysis	376.2		1	101191	04/22/14 09:30	HMZ	TAL CC
Total/NA	Analysis	SM 2320B		1	101444	04/29/14 11:35	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101348	04/17/14 11:00	LPO	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Certification Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Laboratory: TestAmerica Corpus Christi

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Bicarbonate Alkalinity as CaCO3
SM 2320B		Water	Carbonate Alkalinity as CaCO3
SM 2320B		Water	Hydroxide Alkalinity
SM 2320B		Water	Phenolphthalein Alkalinity
SM 2320B		Water	Total Alkalinity as CaCO3
SM 3500 FE D		Water	Ferrous Iron

Method Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC
300.0	Anions, Ion Chromatography	MCAWW	TAL CC
376.2	Sulfide	MCAWW	TAL CC
SM 2320B	Alkalinity	SM	TAL CC
SM 3500 FE D	Iron, Ferrous	SM	TAL CC

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Sample Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-46801-1	AOC-TB01	Water	04/16/14 09:00	04/16/14 16:45
560-46801-2	AOC-EMWU40T-0414	Water	04/16/14 10:25	04/16/14 16:45
560-46801-3	AOC-EMWU40T-0414-1	Water	04/16/14 10:25	04/16/14 16:45
560-46801-4	AOC-EMWU26T-0414	Water	04/16/14 11:45	04/16/14 16:45
560-46801-5	AOC-EMWU28T-0414	Water	04/16/14 13:40	04/16/14 16:45
560-46801-6	AOC-EMWU41T-0414	Water	04/16/14 14:25	04/16/14 16:45
560-46801-7	AOC-EMWU30T-0414	Water	04/16/14 15:15	04/16/14 16:45
560-46801-8	AOC-EMWU29T-0414	Water	04/16/14 15:55	04/16/14 16:45

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAmerica THE LEADER IN E

Loc: 560
46801

Client Information	Sampler: Liz Pinchart / John Sankness	Lab PM: Salcher, Neal	Carrier Tracking No(s):	COC No: 560-13299-862.6
Client Contact: David Zuvanich	Phone: 210-219-1561	E-Mail: neal.salcher@testamericainc.com		Page: Page 1 of 1
Company: El Paso Energy Corporation				Job #: 46801
Address: 1001 Louisiana Street Room S1905B	Due Date Requested:			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: WD# 208570			
Project Name: Elementis AOC Groundwater	Project #: 56000079			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - Benzene	SM4500S2D - Sulfide	E300.0 - SO4, NO3, NO2	SM3500 - Ferrous Fe Alk	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	B	N	N		
AOC-TB01	4/16/14	0900	G	Water	N	N	X					
AOC-EMWU40T-0414		1025		Water			X	X	X	X		
AOC-EMWU40T-0414-1		1025		Water			X					
AOC-EMWU26T-0414		1145		Water			X	X	X	X		
AOC-EMWU28T-0414		1340		Water			X	X	X	X		
AOC-EMWU41T-0414		1425		Water			X					
AOC-EMWU30T-0414		1515		Water			X					
AOC-EMWU29T-0414		1555		Water			X	X	X	X		
				Water								
				Water								
				Water								

560-46801 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	4-16-14 / 1645	WRS	[signature]	4/16/14 1645	TAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: IR4 obs 0.3 °C Cor 0.5 °C

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-46801-1

Login Number: 46801

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46801-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.140	ug/L	8260B

General Chemistry

Analyte	MQL	MDL	Units	Method
Chloride	1.00	0.192	mg/L	300.0
Nitrate as N	0.500	0.103	mg/L	300.0
Nitrite as N	0.500	0.200	mg/L	300.0
Sulfate	1.00	0.377	mg/L	300.0
Sulfide	0.0500	0.0131	mg/L	376.2
Bicarbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Carbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Hydroxide Alkalinity	5.00	5.00	mg/L	SM 2320B
Phenolphthalein Alkalinity	5.00	5.00	mg/L	SM 2320B
Total Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Ferrous Iron	0.200	0.0220	mg/L	SM 3500 FE D

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-46801-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Sophia Shah		5/15/2014
Name (printed)	Signature	Date

Project Management Assistant
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/15/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46801-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				R05D
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		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" must be included in the laboratory data package submitted 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 Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/15/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46801-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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 Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/15/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46801-1
Reviewer Name:	Neal Salcher		

ER #[1]	Description
R05D	Method 300.0: The method blank for batch 101011 contained SO4 above the reporting limit (RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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).

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TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	12/30/2013 - 4Q13
METHOD NUMBER:	8260B
METHOD DESCRIPTION:	GC/MS
PREP METHOD:	5030B
INSTRUMENT:	VGCMS # 1

ANALYTE	CURRENT MDL (ug/L)	SPIKE RANGE MINIMUM (ug/L)	SPIKE RANGE MAXIMUM (ug/L)	SPIKE (ug/L)	MEAS VALUE (ug/L)	ANALYTE IS DETECTED
1,1,1,2-Tetrachloroethane	0.209	0.209	0.627	0.5	0.415	yes
1,1,1-Trichloroethane	0.3	0.3	0.9	0.5	0.411	yes
1,1,2,2-Tetrachloroethane	0.19	0.19	0.57	0.5	0.361	yes
1,1,2-Trichloro-1,2,2-trifluoroethane	0.278	0.278	0.834	0.5	0.418	yes
1,1,2-Trichloroethane	0.173	0.173	0.519	0.5	0.451	yes
1,1-Dichloroethane	0.168	0.168	0.504	0.5	0.503	yes
1,1-Dichloroethene	0.3	0.3	0.9	0.5	0.514	yes
1,1-Dichloropropene	0.185	0.185	0.555	0.5	0.582	yes
1,2,3-Trichlorobenzene	0.217	0.217	0.651	0.5	0.425	yes
1,2,3-Trichloropropane	0.191	0.191	0.573	0.5	0.293	yes
1,2,4-Trichlorobenzene	0.168	0.168	0.504	0.5	0.435	yes
1,2,4-Trimethylbenzene	0.2	0.2	0.6	0.5	0.361	yes
1,2-Dibromo-3-Chloropropane	0.349	0.349	1.047	1	0.597	yes
1,2-Dibromoethane	0.15	0.15	0.45	0.3	0.165	yes
1,2-Dichlorobenzene	0.117	0.117	0.351	0.3	0.317	yes
1,2-Dichloroethane	0.16	0.16	0.48	0.5	0.47	yes
1,2-Dichloropropane	0.173	0.173	0.519	0.5	0.442	yes
1,3,5-Trichlorobenzene	0.203	0.203	0.609	0.3	0.322	yes
1,3,5-Trimethylbenzene	0.2	0.2	0.6	0.3	0.227	yes
1,3-Dichlorobenzene	0.128	0.128	0.384	0.3	0.291	yes
1,3-Dichloropropane	0.146	0.146	0.438	0.3	0.204	yes
1,4-Dichlorobenzene	0.2	0.2	0.6	0.3	0.341	yes
1,4-Dioxane	7.46	7.46	22.38	20	9.06	yes
1-Chlorohexane	0.5	0.5	1.5	1	2.31	yes
1-Octene	0.44	0.44	1.32	1	0.447	yes
2,2-Dichloropropane	0.335	0.335	1.005	1	1.07	yes
2-Chloro-1,3-butadiene	0.2	0.2	0.6	0.5	0.46	yes
2-Chloroethyl vinyl ether	0.191	0.191	0.573	1	1.27	yes
2-Chlorotoluene	0.155	0.155	0.465	0.3	0.244	yes
2-Hexanone	0.2	0.2	0.6	1	0.564	yes
2-Nitropropane	0.225	0.225	0.675	1	4.17	yes
4-Chlorotoluene	0.242	0.242	0.726	0.5	0.41	yes
4-Isopropyltoluene	0.15	0.15	0.45	0.3	0.241	yes
4-Methyl-2-pentanone (MIBK)	0.116	0.116	0.348	0.3	0.124	yes
Acetone	5	5	15	5	5.94	yes
Acetonitrile	10	10	30	20	19.7	yes
Acrolein	5	5	15	10	14.4	yes
Acrylonitrile	1.93	1.93	5.79	5	7.56	yes
Allyl chloride	0.421	0.421	1.263	0.5	0.5	yes
Benzene	0.14	0.14	0.42	0.3	0.353	yes
Benzyl chloride	0.278	0.278	0.834	0.5	3.05	yes
Bromobenzene	0.128	0.128	0.384	0.3	0.25	yes
Bromodichloromethane	0.175	0.175	0.525	0.3	0.246	yes
Bromoform	0.5	0.5	1.5	1	0.673	yes
Bromomethane	0.392	0.392	1.176	0.5	0.548	yes
Butadiene	0.3	0.3	0.9	0.5	0.782	yes
Carbon disulfide	0.5	0.5	1.5	0.5	0.606	yes
Carbon tetrachloride	0.251	0.251	0.753	0.5	0.487	yes
Chlorobenzene	0.136	0.136	0.408	0.3	0.299	yes
Chlorobromomethane	0.228	0.228	0.684	0.5	0.398	yes
Chlorodibromomethane	0.223	0.223	0.669	0.5	0.737	yes
Chloroethane	0.4	0.4	1.2	0.5	0.545	yes
Chloroform	0.173	0.173	0.519	0.3	0.293	yes
Chloromethane	0.39	0.39	1.17	0.5	0.686	yes
cis-1,2-Dichloroethene	0.121	0.121	0.363	0.3	0.276	yes
cis-1,3-Dichloropropene	0.146	0.146	0.438	0.3	0.588	yes
cis-1,4-Dichloro-2-butene	0.5	0.5	1.5	0.5	9.63	yes

Cyclohexane	1	1	3	2	1.71	yes
Cyclohexanone	5	5	15	10	6.21	yes
Dibromomethane	0.165	0.165	0.495	0.5	0.499	yes
Dichlorodifluoromethane	0.429	0.429	1.287	1	1.08	yes
Ethyl acetate	1	1	3	1	3	yes
Ethyl ether	0.135	0.135	0.405	0.5	0.356	yes
Ethyl methacrylate	0.5	0.5	1.5	1	0.769	yes
Ethylbenzene	0.2	0.2	0.6	0.3	0.26	yes
Ethylene Oxide	9.2	9.2	27.6	20	13.1	yes
Hexachlorobutadiene	0.86	0.86	2.58	1	0.973	yes
Hexane	2	2	6	5	4.13	yes
Iodomethane	0.223	0.223	0.669	0.3	0.303	yes
Isobutyl alcohol	3.39	3.39	10.17	40	41.7	yes
Isooctane	0.5	0.5	1.5	1	0.799	yes
Isopropylbenzene	0.2	0.2	0.6	0.3	0.246	yes
m-Xylene & p-Xylene	0.26	0.26	0.78	2	1.94	yes
Methacrylonitrile	1.55	1.55	4.65	10	9.93	yes
Methyl ethyl ketone (MEK)	1	1	3	1	2.03	yes
Methyl methacrylate	0.196	0.196	0.588	1	0.827	yes
Methyl tert-butyl ether	0.2	0.2	0.6	0.3	0.319	yes
Methylene Chloride	2	2	6	2	2.29	yes
n-Butylbenzene	0.2	0.2	0.6	0.3	0.265	yes
n-Heptane	0.3	0.3	0.9	0.5	0.376	yes
N-Propylbenzene	0.106	0.106	0.318	0.3	0.247	yes
Naphthalene	0.2	0.2	0.6	0.5	0.296	yes
o-Xylene	0.2	0.2	0.6	0.3	0.26	yes
Pentachloroethane	0.302	0.302	0.906	1	0.772	yes
Propionitrile	2.69	2.69	8.07	10	10.3	yes
sec-Butylbenzene	0.3	0.3	0.9	0.5	0.373	yes
Styrene	0.2	0.2	0.6	0.5	0.668	yes
tert-Butylbenzene	0.2	0.2	0.6	0.3	0.233	yes
Tetrachloroethene	0.189	0.189	0.567	0.3	0.289	yes
Toluene	0.3	0.3	0.9	0.3	0.352	yes
trans-1,2-Dichloroethene	0.2	0.2	0.6	0.5	0.436	yes
trans-1,3-Dichloropropene	0.2	0.2	0.6	0.3	0.65	yes
trans-1,4-Dichloro-2-butene	0.5	0.5	1.5	1	0.598	yes
Trichloroethene	0.317	0.317	0.951	0.5	0.48	yes
Trichlorofluoromethane	0.244	0.244	0.732	0.5	0.494	yes
Vinyl acetate	0.3	0.3	0.9	1	2.72	yes
Vinyl chloride	0.3	0.3	0.9	0.5	0.58	yes
Xylenes, Total	0.226	0.226	0.678	0.9	0.798	yes

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TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	1Q13
LAB:	organic Chemistry (Wet Lab
JOB #:	560-33719-1

ANALYTE	CURRENT MDL (mg/L)	SPIKE RANGE MINIMUM (mg/L)	SPIKE RANGE MAXIMUM (mg/L)	SPIKE (mg/L)	MEAS VALUE (mg/L)	ANALYTE IS DETECTED
Alkalinity, Titration Method 2320B	1.29	1.29	3.87	3	0.6	yes
Ammonia (as Nitrogen) Method 350.1 by SEAL AQ2	0.045	0.045	0.135	0.1	0.27	yes
Chemical Oxygen Demand (COD) Colorimetric by HACH8000	3.11	3.11	9.33	10	17.5	yes
HEM (Oil & Grease) 1664A_NP	0.78	0.78	2.34	1.96	1.5	yes
Total Organic Carbon (TOC) by SM5310B	0.285	0.285	0.855	0.5	0.693	yes
EPA 300 Anions, Ion Chromotography						
Bromide	0.315	0.315	0.945	0.5	0.829	yes
Chloride	0.192	0.192	0.576	0.5	0.567	yes
Nitrate as N	0.103	0.103	0.309	0.2	0.45	yes
Nitrate Nitrite as N	0.2	0.2	0.6	0.4	0.785	yes
Nitrite as N	0.2	0.2	0.6	0.2	0.335	yes
Sulfate	0.377	0.377	1.131	1	1.68	yes
Chloride by 325.2	5	5	15	5	5	yes
Cyanide, Total 335.4	0.0082	0.0082	0.0246	0.02	0.0339	yes
Orthophosphate as P by 365.3	0.0141	0.0141	0.0423	0.03	0.031	yes
Sulfide by 376.2	0.0131	0.0131	0.0393	0.0301	0.019	yes
Ferrous Iron by SM3500 FeD	0.022	0.022	0.066	0.05	0.043	yes
Chlorine, Total Residual	0.0766	0.0766	0.2298	0.1	0.15	yes
Fluoride (Ion -selective electrode) by SM4500 F C	0.02	0.02	0.06	0.05	0.0624	yes
Nitrite as N by SM4500 NO2 B	0.002	0.002	0.006	0.005	0.005	yes
Sulfite by SM4500 SO3 B	2	2	6	2	2	yes
MBAS by SM5540C	0.036	0.036	0.108	0.05	0.054	yes

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-46832-1
Client Project/Site: Elementis AOC Groundwater

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
5/15/2014 4:44:19 PM
Sophia Shah, Project Management Assistant I
sophia.shah@testamericainc.com

Designee for

Neal Salcher, Senior Project Manager
neal.salcher@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46832-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

General Chemistry

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Analyte was not detected at or above the SDL.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 560-46832-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-46832-1

Comments
No additional comments.

Receipt
The samples were received on 4/17/2014 4:41 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 4.1º C.

Detection Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46832-1

Client Sample ID: AOC-TB02 — Lab Sample ID: 560-46832-1

No Detections.

Client Sample ID: AOC-EMWU1T-0414 — Lab Sample ID: 560-46832-2

No Detections.

Client Sample ID: AOC-EMWU6T-0414 — Lab Sample ID: 560-46832-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	1130		50.0	9.60	mg/L	50		300.0	Total/NA
Nitrate as N	42.7		25.0	5.15	mg/L	50		300.0	Total/NA
Sulfate	1260		500	189	mg/L	500		300.0	Total/NA
Total Alkalinity as CaCO3	939		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	939		5.00	5.00	mg/L	1		SM 2320B	Total/NA

Client Sample ID: AOC-EMWU32T-0414 — Lab Sample ID: 560-46832-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	16.2		5.00	0.700	ug/L	5		8260B	Total/NA

Client Sample ID: AOC-EMWU33T-0414 — Lab Sample ID: 560-46832-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46832-1

Client Sample ID: AOC-TB02

Lab Sample ID: 560-46832-1
Date Collected: 04/17/14 07:45
Matrix: Water
Date Received: 04/17/14 16:41

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/14 15:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/20/14 15:55*	*1*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*		*04/20/14 15:55*	*1*
Dibromofluoromethane (Surr)	*104*		*69 - 130*		*04/20/14 15:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*70 - 140*		*04/20/14 15:55*	*1*

Client Sample ID: AOC-EMWU1T-0414

Lab Sample ID: 560-46832-2
Date Collected: 04/17/14 08:25
Matrix: Water
Date Received: 04/17/14 16:41

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/14 16:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/20/14 16:21*	*1*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*		*04/20/14 16:21*	*1*
Dibromofluoromethane (Surr)	*103*		*69 - 130*		*04/20/14 16:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 140*		*04/20/14 16:21*	*1*

Client Sample ID: AOC-EMWU6T-0414

Lab Sample ID: 560-46832-3
Date Collected: 04/17/14 09:35
Matrix: Water
Date Received: 04/17/14 16:41

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/14 16:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/20/14 16:46*	*1*
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*		*04/20/14 16:46*	*1*
Dibromofluoromethane (Surr)	*100*		*69 - 130*		*04/20/14 16:46*	*1*
1,2-Dichloroethane-d4 (Surr)	*117*		*70 - 140*		*04/20/14 16:46*	*1*

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1130**		50.0	9.60	mg/L			04/17/14 23:21	50
Nitrate as N	**42.7**		25.0	5.15	mg/L			04/17/14 23:21	50
Nitrite as N	10.0	U	25.0	10.0	mg/L			04/17/14 23:21	50
Sulfate	**1260**		500	189	mg/L			04/24/14 17:24	500
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/22/14 09:30	1
Total Alkalinity as CaCO3	**939**		5.00	5.00	mg/L			05/01/14 09:15	1
Bicarbonate Alkalinity as CaCO3	**939**		5.00	5.00	mg/L			05/01/14 09:15	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Ferrous Iron	0.0220	U HF	0.200	0.0220	mg/L			04/18/14 09:00	1

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46832-1

Client Sample ID: AOC-EMWU32T-0414

Lab Sample ID: 560-46832-4

Date Collected: 04/17/14 10:40
Matrix: Water
Date Received: 04/17/14 16:41

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	16.2		5.00	0.700	ug/L			04/20/14 17:11	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*04/20/14 17:11*	*5*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*		*04/20/14 17:11*	*5*
Dibromofluoromethane (Surr)	*101*		*69 - 130*		*04/20/14 17:11*	*5*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 140*		*04/20/14 17:11*	*5*

Client Sample ID: AOC-EMWU33T-0414

Lab Sample ID: 560-46832-5

Date Collected: 04/17/14 11:30
Matrix: Water
Date Received: 04/17/14 16:41

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	70.0	U	500	70.0	ug/L			04/20/14 17:36	500

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/20/14 17:36*	*500*
4-Bromofluorobenzene (Surr)	*110*		*70 - 130*		*04/20/14 17:36*	*500*
Dibromofluoromethane (Surr)	*104*		*69 - 130*		*04/20/14 17:36*	*500*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 140*		*04/20/14 17:36*	*500*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 560-101050/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101050

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/14 12:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/20/14 12:59*	*1*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*		*04/20/14 12:59*	*1*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*04/20/14 12:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 140*		*04/20/14 12:59*	*1*

Lab Sample ID: LCS 560-101050/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101050

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	23.03		ug/L		92	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*
Dibromofluoromethane (Surr)	*105*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 140*

Lab Sample ID: 560-46802-C-26 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101050

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	1220		1250	2441		ug/L		98	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*70 - 130*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*
Dibromofluoromethane (Surr)	*106*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 140*

Lab Sample ID: 560-46802-C-26 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101050

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	1220		1250	2357		ug/L		91	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*106*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 140*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 560-101011/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101011

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.192	U	1.00	0.192	mg/L			04/17/14 13:04	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/17/14 13:04	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/17/14 13:04	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/17/14 13:04	1

Lab Sample ID: LCS 560-101011/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101011

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.751		mg/L		98	90 - 110
Nitrate as N	5.00	4.922		mg/L		98	90 - 110
Nitrite as N	5.00	5.085		mg/L		102	90 - 110
Sulfate	20.0	19.70		mg/L		98	90 - 110

Lab Sample ID: 560-46809-B-1 MS ^10 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101011

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	128		100	226.8		mg/L		98	80 - 120
Nitrate as N	13.7		50.0	55.71		mg/L		84	80 - 120
Nitrite as N	2.00	U	50.0	52.41		mg/L		105	80 - 120
Sulfate	74.3		200	268.3		mg/L		97	80 - 120

Lab Sample ID: 560-46809-B-1 MSD ^10 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101011

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	128		100	224.3		mg/L		96	80 - 120	1	20
Nitrate as N	13.7		50.0	57.89		mg/L		88	80 - 120	4	20
Nitrite as N	2.00	U	50.0	50.83		mg/L		102	80 - 120	3	20
Sulfate	74.3		200	265.6		mg/L		96	80 - 120	1	20

Lab Sample ID: MB 560-101272/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.8180	J	1.00	0.192	mg/L			04/24/14 11:10	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/24/14 11:10	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/24/14 11:10	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/24/14 11:10	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 560-101272/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.886		mg/L		99	90 - 110
Nitrate as N	5.00	4.989		mg/L		100	90 - 110
Nitrite as N	5.00	4.957		mg/L		99	90 - 110
Sulfate	20.0	20.56		mg/L		103	90 - 110

Lab Sample ID: 560-46970-D-4 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	1670	b	1000	2915	N1	mg/L		124	80 - 120
Nitrate as N	52.5		500	342.8	N1	mg/L		58	80 - 120
Nitrite as N	20.0	U	500	497.1		mg/L		99	80 - 120
Sulfate	257		2000	1135	N1	mg/L		44	80 - 120

Lab Sample ID: 560-46970-D-4 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	1670	b	1000	2872		mg/L		120	80 - 120	2	20
Nitrate as N	52.5		500	360.7	N1	mg/L		62	80 - 120	5	20
Nitrite as N	20.0	U	500	453.1		mg/L		91	80 - 120	9	20
Sulfate	257		2000	1154	N1	mg/L		45	80 - 120	2	20

Method: 376.2 - Sulfide

Lab Sample ID: MB 560-101191/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/22/14 09:30	1

Lab Sample ID: LCS 560-101191/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.501	0.5000		mg/L		100	80 - 120

Lab Sample ID: 560-46829-M-11 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	32.1		50.1	88.40		mg/L		112	75 - 125

Method: 376.2 - Sulfide (Continued)

Lab Sample ID: 560-46829-M-11 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide	32.1		50.1	89.00		mg/L		114	75 - 125	1	20

Method: SM 2320B - Alkalinity

Lab Sample ID: LCS 560-101538/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	100	98.00		mg/L		98	85 - 115

Lab Sample ID: 560-46829-K-11 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	473		100	577.6	4	mg/L		105	75 - 125

Lab Sample ID: 560-46829-K-11 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Alkalinity as CaCO3	473		100	573.0	4	mg/L		100	75 - 125	1	20

Method: SM 3500 FE D - Iron, Ferrous

Lab Sample ID: MB 560-101351/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101351

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Ferrous Iron	0.0220	U	0.200	0.0220	mg/L			04/18/14 09:00	1

Lab Sample ID: LCS 560-101351/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101351

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ferrous Iron	0.800	0.8040		mg/L		101	80 - 120

Lab Sample ID: 560-46829-A-11 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101351

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ferrous Iron	0.371		0.800	1.257		mg/L		111	75 - 125

Method: SM 3500 FE D - Iron, Ferrous (Continued)

Lab Sample ID: 560-46829-A-11 MSD
Matrix: Water
Analysis Batch: 101351

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ferrous Iron	0.371		0.800	1.252		mg/L		110	75 - 125	0	20

QC Association Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46832-1

GC/MS VOA

Analysis Batch: 101050

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46802-C-26 MS	Matrix Spike	Total/NA	Water	8260B	
560-46802-C-26 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
560-46832-1	AOC-TB02	Total/NA	Water	8260B	
560-46832-2	AOC-EMWU1T-0414	Total/NA	Water	8260B	
560-46832-3	AOC-EMWU6T-0414	Total/NA	Water	8260B	
560-46832-4	AOC-EMWU32T-0414	Total/NA	Water	8260B	
560-46832-5	AOC-EMWU33T-0414	Total/NA	Water	8260B	
LCS 560-101050/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-101050/8	Method Blank	Total/NA	Water	8260B	

General Chemistry

Analysis Batch: 101011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46809-B-1 MS ^10	Matrix Spike	Total/NA	Water	300.0	
560-46809-B-1 MSD ^10	Matrix Spike Duplicate	Total/NA	Water	300.0	
560-46832-3	AOC-EMWU6T-0414	Total/NA	Water	300.0	
LCS 560-101011/4	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101011/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 101191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46829-M-11 MS	Matrix Spike	Total/NA	Water	376.2	
560-46829-M-11 MSD	Matrix Spike Duplicate	Total/NA	Water	376.2	
560-46832-3	AOC-EMWU6T-0414	Total/NA	Water	376.2	
LCS 560-101191/4	Lab Control Sample	Total/NA	Water	376.2	
MB 560-101191/3	Method Blank	Total/NA	Water	376.2	

Analysis Batch: 101272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46832-3	AOC-EMWU6T-0414	Total/NA	Water	300.0	
560-46970-D-4 MS	Matrix Spike	Total/NA	Water	300.0	
560-46970-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	
LCS 560-101272/4	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101272/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 101351

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46829-A-11 MS	Matrix Spike	Total/NA	Water	SM 3500 FE D	
560-46829-A-11 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 3500 FE D	
560-46832-3	AOC-EMWU6T-0414	Total/NA	Water	SM 3500 FE D	
LCS 560-101351/4	Lab Control Sample	Total/NA	Water	SM 3500 FE D	
MB 560-101351/3	Method Blank	Total/NA	Water	SM 3500 FE D	

Analysis Batch: 101538

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46829-K-11 MS	Matrix Spike	Total/NA	Water	SM 2320B	
560-46829-K-11 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 2320B	
560-46832-3	AOC-EMWU6T-0414	Total/NA	Water	SM 2320B	
LCS 560-101538/1	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46832-1

Client Sample ID: AOC-TB02 — Lab Sample ID: 560-46832-1

Date Collected: 04/17/14 07:45 — **Matrix: Water**
Date Received: 04/17/14 16:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101050	04/20/14 15:55	RJT	TAL CC

Client Sample ID: AOC-EMWU1T-0414 — Lab Sample ID: 560-46832-2

Date Collected: 04/17/14 08:25 — **Matrix: Water**
Date Received: 04/17/14 16:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101050	04/20/14 16:21	RJT	TAL CC

Client Sample ID: AOC-EMWU6T-0414 — Lab Sample ID: 560-46832-3

Date Collected: 04/17/14 09:35 — **Matrix: Water**
Date Received: 04/17/14 16:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101050	04/20/14 16:46	RJT	TAL CC
Total/NA	Analysis	300.0		50	101011	04/17/14 23:21	JEM	TAL CC
Total/NA	Analysis	300.0		500	101272	04/24/14 17:24	JEM	TAL CC
Total/NA	Analysis	376.2		1	101191	04/22/14 09:30	HMZ	TAL CC
Total/NA	Analysis	SM 2320B		1	101538	05/01/14 09:15	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101351	04/18/14 09:00	LPO	TAL CC

Client Sample ID: AOC-EMWU32T-0414 — Lab Sample ID: 560-46832-4

Date Collected: 04/17/14 10:40 — **Matrix: Water**
Date Received: 04/17/14 16:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	101050	04/20/14 17:11	RJT	TAL CC

Client Sample ID: AOC-EMWU33T-0414 — Lab Sample ID: 560-46832-5

Date Collected: 04/17/14 11:30 — **Matrix: Water**
Date Received: 04/17/14 16:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		500	101050	04/20/14 17:36	RJT	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Certification Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46832-1

Laboratory: TestAmerica Corpus Christi

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Bicarbonate Alkalinity as CaCO3
SM 2320B		Water	Carbonate Alkalinity as CaCO3
SM 2320B		Water	Hydroxide Alkalinity
SM 2320B		Water	Phenolphthalein Alkalinity
SM 2320B		Water	Total Alkalinity as CaCO3
SM 3500 FE D		Water	Ferrous Iron

Method Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46832-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC
300.0	Anions, Ion Chromatography	MCAWW	TAL CC
376.2	Sulfide	MCAWW	TAL CC
SM 2320B	Alkalinity	SM	TAL CC
SM 3500 FE D	Iron, Ferrous	SM	TAL CC

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Sample Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46832-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-46832-1	AOC-TB02	Water	04/17/14 07:45	04/17/14 16:41
560-46832-2	AOC-EMWU1T-0414	Water	04/17/14 08:25	04/17/14 16:41
560-46832-3	AOC-EMWU6T-0414	Water	04/17/14 09:35	04/17/14 16:41
560-46832-4	AOC-EMWU32T-0414	Water	04/17/14 10:40	04/17/14 16:41
560-46832-5	AOC-EMWU33T-0414	Water	04/17/14 11:30	04/17/14 16:41

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAm

Loc: 560
46832

Client Information	Sampler: Liz Rinehart / John Sorkness	Lab PM: Salcher, Neal	Carrier Tracking No(s):	COC No: 560-13299-862.6
Client Contact: David Zuvanich	Phone: 210-219-1561	E-Mail: neal.salcher@testamericainc.com		Page: Page 1 of
Company: El Paso Energy Corporation				Job #: 46835
Address: 1001 Louisiana Street Room S1905B	Due Date Requested:			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: WD# 208570			
Project Name: Elementis AOC Groundwater	Project #: 56000079			
Site:	SSOW#.			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - Benzene	SM4500S2D - Sulfide	E 300.0 - SO4, NO3, NO2	SM 3500-Fe - Ferrous Fe, Alk	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	BC	N	N		
AOC-TB02	4/17/14	0745	G	Water	N	N	X				2	
AOC-EMWU1T-0414	↓	0825	↓	Water	↓	↓	X				3	
AOC-EMWU6T-0414	↓	0935	↓	Water	↓	↓	X	X	X	X	5	
AOC-EMWU32T-0414	↓	1040	↓	Water	↓	↓	X				3	
AOC-EMWU33T-0414	↓	1130	↓	Water	↓	↓	X				3	
				Water								
				Water								
				Water								
				Water								
				Water								
				Water								

560-46832 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 4-17-14 / 1641	Company: LRS	Received by:	Date/Time: 04/16/14 1	Company: TACC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: Obs 3.9C Corr 4.1C IR4		

Page 17 of 26

5/15/2014

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-46832-1

Login Number: 46832

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46832-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.140	ug/L	8260B

General Chemistry

Analyte	MQL	MDL	Units	Method
Chloride	1.00	0.192	mg/L	300.0
Nitrate as N	0.500	0.103	mg/L	300.0
Nitrite as N	0.500	0.200	mg/L	300.0
Sulfate	1.00	0.377	mg/L	300.0
Sulfide	0.0500	0.0131	mg/L	376.2
Bicarbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Carbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Hydroxide Alkalinity	5.00	5.00	mg/L	SM 2320B
Phenolphthalein Alkalinity	5.00	5.00	mg/L	SM 2320B
Total Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Ferrous Iron	0.200	0.0220	mg/L	SM 3500 FE D

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-46832-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Sophia Shah		5/15/2014
Name (printed)	Signature	Date

Project Management Assistant
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/15/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46832-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			R07C
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		X			R10B
		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" must be included in the laboratory data package submitted 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 Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/15/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46832-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

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Laboratory Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/15/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46832-1
Reviewer Name:	Neal Salcher		

ER #[1]	Description
R07C	Method 300.0: 560-46970-D-4 MS failed the recovery criteria for the following analyte(s): Chloride, Nitrate as N, Sulfate. Matrix interference is suspected. Method 300.0: 560-46970-D-4 MSD failed the recovery criteria for the following analyte(s): Nitrate as N, Sulfate. Matrix interference is suspected.
R10B	Method 8260B: The following sample was diluted due to the abundance of a non-target analyte: 560-46832-5. Elevated reporting limits (RLs) are provided.8260B#101050 Method 8260B: The following samples were diluted due to the nature of the sample matrix: 560-46832-4(color). Elevated reporting limits (RLs) are provided.8260B#101050

1. Items identified by the letter “R” must be included in the laboratory data package submitted 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).

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	12/30/2013 - 4Q13
METHOD NUMBER:	8260B
METHOD DESCRIPTION:	GC/MS
PREP METHOD:	5030B
INSTRUMENT:	VGCMS # 1

ANALYTE	CURRENT MDL (ug/L)	SPIKE RANGE MINIMUM (ug/L)	SPIKE RANGE MAXIMUM (ug/L)	SPIKE (ug/L)	MEAS VALUE (ug/L)	ANALYTE IS DETECTED
1,1,1,2-Tetrachloroethane	0.209	0.209	0.627	0.5	0.415	yes
1,1,1-Trichloroethane	0.3	0.3	0.9	0.5	0.411	yes
1,1,2,2-Tetrachloroethane	0.19	0.19	0.57	0.5	0.361	yes
1,1,2-Trichloro-1,2,2-trifluoroethane	0.278	0.278	0.834	0.5	0.418	yes
1,1,2-Trichloroethane	0.173	0.173	0.519	0.5	0.451	yes
1,1-Dichloroethane	0.168	0.168	0.504	0.5	0.503	yes
1,1-Dichloroethene	0.3	0.3	0.9	0.5	0.514	yes
1,1-Dichloropropene	0.185	0.185	0.555	0.5	0.582	yes
1,2,3-Trichlorobenzene	0.217	0.217	0.651	0.5	0.425	yes
1,2,3-Trichloropropane	0.191	0.191	0.573	0.5	0.293	yes
1,2,4-Trichlorobenzene	0.168	0.168	0.504	0.5	0.435	yes
1,2,4-Trimethylbenzene	0.2	0.2	0.6	0.5	0.361	yes
1,2-Dibromo-3-Chloropropane	0.349	0.349	1.047	1	0.597	yes
1,2-Dibromoethane	0.15	0.15	0.45	0.3	0.165	yes
1,2-Dichlorobenzene	0.117	0.117	0.351	0.3	0.317	yes
1,2-Dichloroethane	0.16	0.16	0.48	0.5	0.47	yes
1,2-Dichloropropane	0.173	0.173	0.519	0.5	0.442	yes
1,3,5-Trichlorobenzene	0.203	0.203	0.609	0.3	0.322	yes
1,3,5-Trimethylbenzene	0.2	0.2	0.6	0.3	0.227	yes
1,3-Dichlorobenzene	0.128	0.128	0.384	0.3	0.291	yes
1,3-Dichloropropane	0.146	0.146	0.438	0.3	0.204	yes
1,4-Dichlorobenzene	0.2	0.2	0.6	0.3	0.341	yes
1,4-Dioxane	7.46	7.46	22.38	20	9.06	yes
1-Chlorohexane	0.5	0.5	1.5	1	2.31	yes
1-Octene	0.44	0.44	1.32	1	0.447	yes
2,2-Dichloropropane	0.335	0.335	1.005	1	1.07	yes
2-Chloro-1,3-butadiene	0.2	0.2	0.6	0.5	0.46	yes
2-Chloroethyl vinyl ether	0.191	0.191	0.573	1	1.27	yes
2-Chlorotoluene	0.155	0.155	0.465	0.3	0.244	yes
2-Hexanone	0.2	0.2	0.6	1	0.564	yes
2-Nitropropane	0.225	0.225	0.675	1	4.17	yes
4-Chlorotoluene	0.242	0.242	0.726	0.5	0.41	yes
4-Isopropyltoluene	0.15	0.15	0.45	0.3	0.241	yes
4-Methyl-2-pentanone (MIBK)	0.116	0.116	0.348	0.3	0.124	yes
Acetone	5	5	15	5	5.94	yes
Acetonitrile	10	10	30	20	19.7	yes
Acrolein	5	5	15	10	14.4	yes
Acrylonitrile	1.93	1.93	5.79	5	7.56	yes
Allyl chloride	0.421	0.421	1.263	0.5	0.5	yes
Benzene	0.14	0.14	0.42	0.3	0.353	yes
Benzyl chloride	0.278	0.278	0.834	0.5	3.05	yes
Bromobenzene	0.128	0.128	0.384	0.3	0.25	yes
Bromodichloromethane	0.175	0.175	0.525	0.3	0.246	yes
Bromoform	0.5	0.5	1.5	1	0.673	yes
Bromomethane	0.392	0.392	1.176	0.5	0.548	yes
Butadiene	0.3	0.3	0.9	0.5	0.782	yes
Carbon disulfide	0.5	0.5	1.5	0.5	0.606	yes
Carbon tetrachloride	0.251	0.251	0.753	0.5	0.487	yes
Chlorobenzene	0.136	0.136	0.408	0.3	0.299	yes
Chlorobromomethane	0.228	0.228	0.684	0.5	0.398	yes
Chlorodibromomethane	0.223	0.223	0.669	0.5	0.737	yes
Chloroethane	0.4	0.4	1.2	0.5	0.545	yes
Chloroform	0.173	0.173	0.519	0.3	0.293	yes
Chloromethane	0.39	0.39	1.17	0.5	0.686	yes
cis-1,2-Dichloroethene	0.121	0.121	0.363	0.3	0.276	yes
cis-1,3-Dichloropropene	0.146	0.146	0.438	0.3	0.588	yes
cis-1,4-Dichloro-2-butene	0.5	0.5	1.5	0.5	9.63	yes

Cyclohexane	1	1	3	2	1.71	yes
Cyclohexanone	5	5	15	10	6.21	yes
Dibromomethane	0.165	0.165	0.495	0.5	0.499	yes
Dichlorodifluoromethane	0.429	0.429	1.287	1	1.08	yes
Ethyl acetate	1	1	3	1	3	yes
Ethyl ether	0.135	0.135	0.405	0.5	0.356	yes
Ethyl methacrylate	0.5	0.5	1.5	1	0.769	yes
Ethylbenzene	0.2	0.2	0.6	0.3	0.26	yes
Ethylene Oxide	9.2	9.2	27.6	20	13.1	yes
Hexachlorobutadiene	0.86	0.86	2.58	1	0.973	yes
Hexane	2	2	6	5	4.13	yes
Iodomethane	0.223	0.223	0.669	0.3	0.303	yes
Isobutyl alcohol	3.39	3.39	10.17	40	41.7	yes
Isooctane	0.5	0.5	1.5	1	0.799	yes
Isopropylbenzene	0.2	0.2	0.6	0.3	0.246	yes
m-Xylene & p-Xylene	0.26	0.26	0.78	2	1.94	yes
Methacrylonitrile	1.55	1.55	4.65	10	9.93	yes
Methyl ethyl ketone (MEK)	1	1	3	1	2.03	yes
Methyl methacrylate	0.196	0.196	0.588	1	0.827	yes
Methyl tert-butyl ether	0.2	0.2	0.6	0.3	0.319	yes
Methylene Chloride	2	2	6	2	2.29	yes
n-Butylbenzene	0.2	0.2	0.6	0.3	0.265	yes
n-Heptane	0.3	0.3	0.9	0.5	0.376	yes
N-Propylbenzene	0.106	0.106	0.318	0.3	0.247	yes
Naphthalene	0.2	0.2	0.6	0.5	0.296	yes
o-Xylene	0.2	0.2	0.6	0.3	0.26	yes
Pentachloroethane	0.302	0.302	0.906	1	0.772	yes
Propionitrile	2.69	2.69	8.07	10	10.3	yes
sec-Butylbenzene	0.3	0.3	0.9	0.5	0.373	yes
Styrene	0.2	0.2	0.6	0.5	0.668	yes
tert-Butylbenzene	0.2	0.2	0.6	0.3	0.233	yes
Tetrachloroethene	0.189	0.189	0.567	0.3	0.289	yes
Toluene	0.3	0.3	0.9	0.3	0.352	yes
trans-1,2-Dichloroethene	0.2	0.2	0.6	0.5	0.436	yes
trans-1,3-Dichloropropene	0.2	0.2	0.6	0.3	0.65	yes
trans-1,4-Dichloro-2-butene	0.5	0.5	1.5	1	0.598	yes
Trichloroethene	0.317	0.317	0.951	0.5	0.48	yes
Trichlorofluoromethane	0.244	0.244	0.732	0.5	0.494	yes
Vinyl acetate	0.3	0.3	0.9	1	2.72	yes
Vinyl chloride	0.3	0.3	0.9	0.5	0.58	yes
Xylenes, Total	0.226	0.226	0.678	0.9	0.798	yes

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica - Corpus Christi

TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	1Q13
LAB:	organic Chemistry (Wet Lab
JOB #:	560-33719-1

ANALYTE	CURRENT MDL (mg/L)	SPIKE RANGE MINIMUM (mg/L)	SPIKE RANGE MAXIMUM (mg/L)	SPIKE (mg/L)	MEAS VALUE (mg/L)	ANALYTE IS DETECTED
Alkalinity, Titration Method 2320B	1.29	1.29	3.87	3	0.6	yes
Ammonia (as Nitrogen) Method 350.1 by SEAL AQ2	0.045	0.045	0.135	0.1	0.27	yes
Chemical Oxygen Demand (COD) Colorimetric by HACH8000	3.11	3.11	9.33	10	17.5	yes
HEM (Oil & Grease) 1664A_NP	0.78	0.78	2.34	1.96	1.5	yes
Total Organic Carbon (TOC) by SM5310B	0.285	0.285	0.855	0.5	0.693	yes
EPA 300 Anions, Ion Chromotography						
Bromide	0.315	0.315	0.945	0.5	0.829	yes
Chloride	0.192	0.192	0.576	0.5	0.567	yes
Nitrate as N	0.103	0.103	0.309	0.2	0.45	yes
Nitrate Nitrite as N	0.2	0.2	0.6	0.4	0.785	yes
Nitrite as N	0.2	0.2	0.6	0.2	0.335	yes
Sulfate	0.377	0.377	1.131	1	1.68	yes
Chloride by 325.2	5	5	15	5	5	yes
Cyanide, Total 335.4	0.0082	0.0082	0.0246	0.02	0.0339	yes
Orthophosphate as P by 365.3	0.0141	0.0141	0.0423	0.03	0.031	yes
Sulfide by 376.2	0.0131	0.0131	0.0393	0.0301	0.019	yes
Ferrous Iron by SM3500 FeD	0.022	0.022	0.066	0.05	0.043	yes
Chlorine, Total Residual	0.0766	0.0766	0.2298	0.1	0.15	yes
Fluoride (Ion -selective electrode) by SM4500 F C	0.02	0.02	0.06	0.05	0.0624	yes
Nitrite as N by SM4500 NO2 B	0.002	0.002	0.006	0.005	0.005	yes
Sulfite by SM4500 SO3 B	2	2	6	2	2	yes
MBAS by SM5540C	0.036	0.036	0.108	0.05	0.054	yes

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-46854-1
TestAmerica Sample Delivery Group: 04/18/2014
Client Project/Site: AOC Groundwater

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
5/15/2014 4:52:51 PM
Sophia Shah, Project Management Assistant I
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Designee for

Neal Salcher, Senior Project Manager
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LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

Metals

Qualifier	Qualifier Description
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
U	Analyte was not detected at or above the SDL.

General Chemistry

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Analyte was not detected at or above the SDL.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Job ID: 560-46854-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-46854-1

Comments
No additional comments.

Receipt
The samples were received on 4/18/2014 12:29 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3º C.

Detection Summary

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Client Sample ID: AOC- EPZ04-0414-3 — Lab Sample ID: 560-46854-1

No Detections.

Client Sample ID: AOC-TBO3 — Lab Sample ID: 560-46854-2

No Detections.

Client Sample ID: AOC-EMWU3T-0414 — Lab Sample ID: 560-46854-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	2650		100	14.0	ug/L	100		8260B	Total/NA

Client Sample ID: AOC-EPZ05-0414 — Lab Sample ID: 560-46854-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	22900		1000	192	mg/L	1000		300.0	Total/NA
Sulfate	3040		1000	377	mg/L	1000		300.0	Total/NA
Sulfide	38.1		2.50	0.655	mg/L	50		376.2	Total/NA
Total Alkalinity as CaCO3	1230		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	1230		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Ferrous Iron	0.473		0.200	0.0220	mg/L	1		SM 3500 FE D	Total/NA

Client Sample ID: AOC-EMWU2T-0414 — Lab Sample ID: 560-46854-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.00655		0.00500	0.00140	mg/L	1		6020	Dissolved

Client Sample ID: AOC-EmWU2T-0414-1 — Lab Sample ID: 560-46854-6

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.00660		0.00500	0.00140	mg/L	1		6020	Dissolved

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Client Sample ID: AOC- EPZ04-0414-3

Lab Sample ID: 560-46854-1
Date Collected: 04/18/14 08:00
Matrix: Water
Date Received: 04/18/14 12:29

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/19/14 11:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*04/19/14 11:01*	*1*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*		*04/19/14 11:01*	*1*
Dibromofluoromethane (Surr)	*105*		*69 - 130*		*04/19/14 11:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*04/19/14 11:01*	*1*

Client Sample ID: AOC-TBO3

Lab Sample ID: 560-46854-2
Date Collected: 04/18/14 07:30
Matrix: Water
Date Received: 04/18/14 12:29

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/19/14 13:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*04/19/14 13:57*	*1*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*04/19/14 13:57*	*1*
Dibromofluoromethane (Surr)	*109*		*69 - 130*		*04/19/14 13:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*04/19/14 13:57*	*1*

Client Sample ID: AOC-EMWU3T-0414

Lab Sample ID: 560-46854-3
Date Collected: 04/18/14 08:40
Matrix: Water
Date Received: 04/18/14 12:29

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**2650**		100	14.0	ug/L			04/19/14 14:22	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/19/14 14:22*	*100*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*04/19/14 14:22*	*100*
Dibromofluoromethane (Surr)	*104*		*69 - 130*		*04/19/14 14:22*	*100*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*04/19/14 14:22*	*100*

Client Sample ID: AOC-EPZ05-0414

Lab Sample ID: 560-46854-4
Date Collected: 04/18/14 09:15
Matrix: Water
Date Received: 04/18/14 12:29

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/14 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/20/14 15:30*	*1*
4-Bromofluorobenzene (Surr)	*115*		*70 - 130*		*04/20/14 15:30*	*1*
Dibromofluoromethane (Surr)	*106*		*69 - 130*		*04/20/14 15:30*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 140*		*04/20/14 15:30*	*1*

Client Sample ID: AOC-EPZ05-0414

Lab Sample ID: 560-46854-4

Date Collected: 04/18/14 09:15
Matrix: Water
Date Received: 04/18/14 12:29

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**22900**		1000	192	mg/L			04/19/14 20:47	1000
Nitrate as N	103	U	500	103	mg/L			04/19/14 20:47	1000
Nitrite as N	200	U	500	200	mg/L			04/19/14 20:47	1000
Sulfate	**3040**		1000	377	mg/L			04/19/14 20:47	1000
Sulfide	**38.1**		2.50	0.655	mg/L			04/22/14 09:30	50
Total Alkalinity as CaCO3	**1230**		5.00	5.00	mg/L			05/01/14 09:15	1
Bicarbonate Alkalinity as CaCO3	**1230**		5.00	5.00	mg/L			05/01/14 09:15	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Ferrous Iron	**0.473**		0.200	0.0220	mg/L			04/18/14 15:30	1

Client Sample ID: AOC-EMWU2T-0414

Lab Sample ID: 560-46854-5

Date Collected: 04/18/14 10:10
Matrix: Water
Date Received: 04/18/14 12:29

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/19/14 15:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*04/19/14 15:12*	*1*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*		*04/19/14 15:12*	*1*
Dibromofluoromethane (Surr)	*106*		*69 - 130*		*04/19/14 15:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*		*04/19/14 15:12*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**0.00655**		0.00500	0.00140	mg/L		04/23/14 10:00	04/24/14 15:50	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium VI	0.00360	U	0.00500	0.00360	mg/L			04/18/14 15:30	1

Client Sample ID: AOC-EmWU2T-0414-1

Lab Sample ID: 560-46854-6

Date Collected: 04/18/14 10:10
Matrix: Water
Date Received: 04/18/14 12:29

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/19/14 15:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/19/14 15:37*	*1*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*04/19/14 15:37*	*1*
Dibromofluoromethane (Surr)	*106*		*69 - 130*		*04/19/14 15:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 140*		*04/19/14 15:37*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**0.00660**		0.00500	0.00140	mg/L		04/23/14 10:00	04/24/14 15:56	1

Client Sample Results

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Client Sample ID: AOC-EmWU2T-0414-1

Lab Sample ID: 560-46854-6

Date Collected: 04/18/14 10:10
Matrix: Water
Date Received: 04/18/14 12:29

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium VI	0.00360	U	0.00500	0.00360	mg/L			04/18/14 15:30	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 560-101043/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101043

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/19/14 10:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/19/14 10:37*	*1*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*04/19/14 10:37*	*1*
Dibromofluoromethane (Surr)	*107*		*69 - 130*		*04/19/14 10:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*04/19/14 10:37*	*1*

Lab Sample ID: LCS 560-101043/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	48.51		ug/L		97	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*70 - 130*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 140*

Lab Sample ID: 560-46854-1 MS — **Client Sample ID: AOC- EPZ04-0414-3**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101043

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.140	U	25.0	30.53		ug/L		122	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*70 - 130*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
Dibromofluoromethane (Surr)	*106*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*

Lab Sample ID: 560-46854-1 MSD — **Client Sample ID: AOC- EPZ04-0414-3**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101043

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.140	U	25.0	31.61		ug/L		126	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*96*		*70 - 130*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
Dibromofluoromethane (Surr)	*109*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 560-101050/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101050

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/14 12:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/20/14 12:59*	*1*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*		*04/20/14 12:59*	*1*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*04/20/14 12:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 140*		*04/20/14 12:59*	*1*

Lab Sample ID: LCS 560-101050/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101050

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	23.03		ug/L		92	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*
Dibromofluoromethane (Surr)	*105*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 140*

Lab Sample ID: 560-46802-C-26 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101050

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	1220		1250	2441		ug/L		98	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*70 - 130*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*
Dibromofluoromethane (Surr)	*106*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 140*

Lab Sample ID: 560-46802-C-26 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101050

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	1220		1250	2357		ug/L		91	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*106*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 140*

QC Sample Results

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 560-101194/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101275 — **Prep Batch: 101194**

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.00140	U	0.00500	0.00140	mg/L		04/23/14 10:00	04/24/14 14:04	1

Lab Sample ID: LCS 560-101194/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101275 — **Prep Batch: 101194**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	0.500	0.4276		mg/L		86	80 - 120

Lab Sample ID: 560-46829-D-2-C MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 101275 — **Prep Batch: 101194**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	0.00311	J	0.500	0.3629	N1	mg/L		72	80 - 120

Lab Sample ID: 560-46829-D-2-D MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 101275 — **Prep Batch: 101194**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	0.00311	J	0.500	0.3424	N1	mg/L		68	80 - 120	6	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 560-101084/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101084

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.192	U	1.00	0.192	mg/L			04/19/14 18:35	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/19/14 18:35	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/19/14 18:35	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/19/14 18:35	1

Lab Sample ID: LCS 560-101084/5 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101084

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.20		mg/L		102	90 - 110
Nitrate as N	5.00	5.178		mg/L		104	90 - 110
Nitrite as N	5.00	5.353		mg/L		107	90 - 110
Sulfate	20.0	21.10		mg/L		106	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 560-46863-A-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101084

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	391		100	505.8		mg/L		115	80 - 120		
Nitrate as N	5.21		50.0	45.45		mg/L		80	80 - 120		
Nitrite as N	2.00	U	50.0	55.78		mg/L		112	80 - 120		

Lab Sample ID: 560-46863-A-1 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101084

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	391		100	502.1		mg/L		111	80 - 120	1	20
Nitrate as N	5.21		50.0	44.33	N1	mg/L		78	80 - 120	2	20
Nitrite as N	2.00	U	50.0	50.44		mg/L		101	80 - 120	10	20

Method: 376.2 - Sulfide

Lab Sample ID: MB 560-101191/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/22/14 09:30	1

Lab Sample ID: LCS 560-101191/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfide			0.501	0.5000		mg/L		100	80 - 120		

Lab Sample ID: 560-46829-M-11 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfide	32.1		50.1	88.40		mg/L		112	75 - 125		

Lab Sample ID: 560-46829-M-11 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide	32.1		50.1	89.00		mg/L		114	75 - 125	1	20

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 560-101294/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101294

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium VI	0.00360	U	0.00500	0.00360	mg/L			04/18/14 15:30	1

Lab Sample ID: LCS 560-101294/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101294

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium VI	0.200	0.1870		mg/L		94	85 - 115

Lab Sample ID: 560-46854-5 MS — **Client Sample ID: AOC-EMWU2T-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101294

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium VI	0.00360	U	0.200	0.1880		mg/L		94	85 - 115

Lab Sample ID: 560-46854-5 MSD — **Client Sample ID: AOC-EMWU2T-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101294

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium VI	0.00360	U	0.200	0.1900		mg/L		95	85 - 115	1	20

Method: SM 2320B - Alkalinity

Lab Sample ID: LCS 560-101538/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	100	98.00		mg/L		98	85 - 115

Lab Sample ID: 560-46829-K-11 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	473		100	577.6	4	mg/L		105	75 - 125

Lab Sample ID: 560-46829-K-11 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Alkalinity as CaCO3	473		100	573.0	4	mg/L		100	75 - 125	1	20

QC Sample Results

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Method: SM 3500 FE D - Iron, Ferrous

Lab Sample ID: MB 560-101351/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101351

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Ferrous Iron	0.0220	U	0.200	0.0220	mg/L			04/18/14 09:00	1

Lab Sample ID: LCS 560-101351/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101351

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ferrous Iron			0.800	0.8040		mg/L		101	80 - 120		

Lab Sample ID: 560-46829-A-11 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101351

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ferrous Iron	0.371		0.800	1.257		mg/L		111	75 - 125		

Lab Sample ID: 560-46829-A-11 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101351

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ferrous Iron	0.371		0.800	1.252		mg/L		110	75 - 125	0	20

QC Association Summary

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

GC/MS VOA

Analysis Batch: 101043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46854-1	AOC- EPZ04-0414-3	Total/NA	Water	8260B	
560-46854-1 MS	AOC- EPZ04-0414-3	Total/NA	Water	8260B	
560-46854-1 MSD	AOC- EPZ04-0414-3	Total/NA	Water	8260B	
560-46854-2	AOC-TBO3	Total/NA	Water	8260B	
560-46854-3	AOC-EMWU3T-0414	Total/NA	Water	8260B	
560-46854-5	AOC-EMWU2T-0414	Total/NA	Water	8260B	
560-46854-6	AOC-EmWU2T-0414-1	Total/NA	Water	8260B	
LCS 560-101043/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-101043/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 101050

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46802-C-26 MS	Matrix Spike	Total/NA	Water	8260B	
560-46802-C-26 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
560-46854-4	AOC-EPZ05-0414	Total/NA	Water	8260B	
LCS 560-101050/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-101050/8	Method Blank	Total/NA	Water	8260B	

Metals

Filtration Batch: 101130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46829-D-2-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
560-46829-D-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Filtration Batch: 101188

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46854-5	AOC-EMWU2T-0414	Dissolved	Water	FILTRATION	
560-46854-6	AOC-EmWU2T-0414-1	Dissolved	Water	FILTRATION	

Prep Batch: 101194

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46829-D-2-C MS	Matrix Spike	Dissolved	Water	3010A	101130
560-46829-D-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	3010A	101130
560-46854-5	AOC-EMWU2T-0414	Dissolved	Water	3010A	101188
560-46854-6	AOC-EmWU2T-0414-1	Dissolved	Water	3010A	101188
LCS 560-101194/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 560-101194/1-A	Method Blank	Total/NA	Water	3010A	

Analysis Batch: 101275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46829-D-2-C MS	Matrix Spike	Dissolved	Water	6020	101194
560-46829-D-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	6020	101194
560-46854-5	AOC-EMWU2T-0414	Dissolved	Water	6020	101194
560-46854-6	AOC-EmWU2T-0414-1	Dissolved	Water	6020	101194
LCS 560-101194/2-A	Lab Control Sample	Total/NA	Water	6020	101194
MB 560-101194/1-A	Method Blank	Total/NA	Water	6020	101194

QC Association Summary

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

General Chemistry

Analysis Batch: 101084

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46854-4	AOC-EPZ05-0414	Total/NA	Water	300.0	
560-46863-A-1 MS	Matrix Spike	Total/NA	Water	300.0	
560-46863-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	
LCS 560-101084/5	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101084/4	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 101191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46829-M-11 MS	Matrix Spike	Total/NA	Water	376.2	
560-46829-M-11 MSD	Matrix Spike Duplicate	Total/NA	Water	376.2	
560-46854-4	AOC-EPZ05-0414	Total/NA	Water	376.2	
LCS 560-101191/4	Lab Control Sample	Total/NA	Water	376.2	
MB 560-101191/3	Method Blank	Total/NA	Water	376.2	

Analysis Batch: 101294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46854-5	AOC-EMWU2T-0414	Total/NA	Water	7196A	
560-46854-5 MS	AOC-EMWU2T-0414	Total/NA	Water	7196A	
560-46854-5 MSD	AOC-EMWU2T-0414	Total/NA	Water	7196A	
560-46854-6	AOC-EmWU2T-0414-1	Total/NA	Water	7196A	
LCS 560-101294/4	Lab Control Sample	Total/NA	Water	7196A	
MB 560-101294/3	Method Blank	Total/NA	Water	7196A	

Analysis Batch: 101351

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46829-A-11 MS	Matrix Spike	Total/NA	Water	SM 3500 FE D	
560-46829-A-11 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 3500 FE D	
560-46854-4	AOC-EPZ05-0414	Total/NA	Water	SM 3500 FE D	
LCS 560-101351/4	Lab Control Sample	Total/NA	Water	SM 3500 FE D	
MB 560-101351/3	Method Blank	Total/NA	Water	SM 3500 FE D	

Analysis Batch: 101538

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46829-K-11 MS	Matrix Spike	Total/NA	Water	SM 2320B	
560-46829-K-11 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 2320B	
560-46854-4	AOC-EPZ05-0414	Total/NA	Water	SM 2320B	
LCS 560-101538/1	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Client Sample ID: AOC- EPZ04-0414-3 — Lab Sample ID: 560-46854-1

Date Collected: 04/18/14 08:00 — **Matrix: Water**
Date Received: 04/18/14 12:29

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101043	04/19/14 11:01	RJT	TAL CC

Client Sample ID: AOC-TBO3 — Lab Sample ID: 560-46854-2

Date Collected: 04/18/14 07:30 — **Matrix: Water**
Date Received: 04/18/14 12:29

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101043	04/19/14 13:57	RJT	TAL CC

Client Sample ID: AOC-EMWU3T-0414 — Lab Sample ID: 560-46854-3

Date Collected: 04/18/14 08:40 — **Matrix: Water**
Date Received: 04/18/14 12:29

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		100	101043	04/19/14 14:22	RJT	TAL CC

Client Sample ID: AOC-EPZ05-0414 — Lab Sample ID: 560-46854-4

Date Collected: 04/18/14 09:15 — **Matrix: Water**
Date Received: 04/18/14 12:29

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101050	04/20/14 15:30	RJT	TAL CC
Total/NA	Analysis	300.0		1000	101084	04/19/14 20:47	HMZ	TAL CC
Total/NA	Analysis	376.2		50	101191	04/22/14 09:30	HMZ	TAL CC
Total/NA	Analysis	SM 2320B		1	101538	05/01/14 09:15	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101351	04/18/14 15:30	LPO	TAL CC

Client Sample ID: AOC-EMWU2T-0414 — Lab Sample ID: 560-46854-5

Date Collected: 04/18/14 10:10 — **Matrix: Water**
Date Received: 04/18/14 12:29

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101043	04/19/14 15:12	RJT	TAL CC
Dissolved	Filtration	FILTRATION			101188	04/23/14 09:30	JEM	TAL CC
Dissolved	Prep	3010A			101194	04/23/14 10:00	JEM	TAL CC
Dissolved	Analysis	6020		1	101275	04/24/14 15:50	JEM	TAL CC
Total/NA	Analysis	7196A		1	101294	04/18/14 15:30	EDR	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Client Sample ID: AOC-EmWU2T-0414-1

Lab Sample ID: 560-46854-6

Date Collected: 04/18/14 10:10

Matrix: Water

Date Received: 04/18/14 12:29

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101043	04/19/14 15:37	RJT	TAL CC
Dissolved	Filtration	FILTRATION			101188	04/23/14 09:30	JEM	TAL CC
Dissolved	Prep	3010A			101194	04/23/14 10:00	JEM	TAL CC
Dissolved	Analysis	6020		1	101275	04/24/14 15:56	JEM	TAL CC
Total/NA	Analysis	7196A		1	101294	04/18/14 15:30	EDR	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Certification Summary

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Laboratory: TestAmerica Corpus Christi

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Bicarbonate Alkalinity as CaCO3
SM 2320B		Water	Carbonate Alkalinity as CaCO3
SM 2320B		Water	Hydroxide Alkalinity
SM 2320B		Water	Phenolphthalein Alkalinity
SM 2320B		Water	Total Alkalinity as CaCO3
SM 3500 FE D		Water	Ferrous Iron

Method Summary

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC
6020	Metals (ICP/MS)	SW846	TAL CC
300.0	Anions, Ion Chromatography	MCAWW	TAL CC
376.2	Sulfide	MCAWW	TAL CC
7196A	Chromium, Hexavalent	SW846	TAL CC
SM 2320B	Alkalinity	SM	TAL CC
SM 3500 FE D	Iron, Ferrous	SM	TAL CC

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Sample Summary

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-46854-1	AOC- EPZ04-0414-3	Water	04/18/14 08:00	04/18/14 12:29
560-46854-2	AOC-TBO3	Water	04/18/14 07:30	04/18/14 12:29
560-46854-3	AOC-EMWU3T-0414	Water	04/18/14 08:40	04/18/14 12:29
560-46854-4	AOC-EPZ05-0414	Water	04/18/14 09:15	04/18/14 12:29
560-46854-5	AOC-EMWU2T-0414	Water	04/18/14 10:10	04/18/14 12:29
560-46854-6	AOC-EmWU2T-0414-1	Water	04/18/14 10:10	04/18/14 12:29

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIR

Loc: 560
46854

Client Information	Sampler: Liz Pinchart / John Sankness	Lab PM: Salcher, Neal	Carrier Tracking No(s):	COC No: 560-13299-862.6
Client Contact: David Zuvanich	Phone: 210-219-1561	E-Mail: neal.salcher@testamericainc.com		Page: Page 1 of _
Company: El Paso Energy Corporation				Job #: 46854
Address: 1001 Louisiana Street Room S1905B	Due Date Requested:			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: WD# 208570			
Project Name: Elementis AOC Groundwater	Project #: 56000079			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - Benzene	SM 4500S2D → sulfide	E 300.0 → SO4 - NO3 - NO2	SM 3500 → Ferrous Fe, Alk	SW7196	SW 6020-D - Cr only							Total Number of containers	Special Instructions/Note:
			Preservation Code:				N													
AOC-EPZ04-0414-3	4/18/14	0800	G	Water	N	Y	X												6	MS/MSD
AOC-TB03		0730		Water		N	X												2	
AOC-EMWU3T-0414		0840		Water			X												3	only Benzene
AOC-EPZ05-0414		0915		Water			X	X	X	X									5	
AOC-EMWU2T-0414		1010		Water			X				X	X							5	
AOC-EMWU2T-0414-1		1010		Water			X				X	X							5	
				Water																
				Water																
				Water																
				Water																
				Water																

560-46854 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	4-18-14 / 12:10	WRS	[signature]	4/18/14 12:10	TAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: IR4 Cooler 1.1 °C Cooler 1.3 °C

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-46854-1
SDG Number: 04/18/2014

Login Number: 46854
List Number: 1
Creator: Hicks, Kristina M

List Source: TestAmerica Corpus Christi

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: AOC Groundwater

TestAmerica Job ID: 560-46854-1
SDG: 04/18/2014

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.140	ug/L	8260B

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	MQL	MDL	Units	Method
Chromium	0.00500	0.00140	mg/L	6020

General Chemistry

Analyte	MQL	MDL	Units	Method
Chloride	1.00	0.192	mg/L	300.0
Nitrate as N	0.500	0.103	mg/L	300.0
Nitrite as N	0.500	0.200	mg/L	300.0
Sulfate	1.00	0.377	mg/L	300.0
Sulfide	0.0500	0.0131	mg/L	376.2
Chromium VI	0.00500	0.00360	mg/L	7196A
Bicarbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Carbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Hydroxide Alkalinity	5.00	5.00	mg/L	SM 2320B
Phenolphthalein Alkalinity	5.00	5.00	mg/L	SM 2320B
Total Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Ferrous Iron	0.200	0.0220	mg/L	SM 3500 FE D

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-46854-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Sophia Shah		5/15/2014
Name (printed)	Signature	Date

Project Management Assistant
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/15/2014
Project Name:	AOC Groundwater	Laboratory Job Number:	560-46854-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			R07C
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		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" must be included in the laboratory data package submitted 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 Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/15/2014
Project Name:	AOC Groundwater	Laboratory Job Number:	560-46854-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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.
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Laboratory Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/15/2014
Project Name:	AOC Groundwater	Laboratory Job Number:	560-46854-1
Reviewer Name:	Neal Salcher		

ER #[1]	Description
R07C	Method 300.0: 560-46863-A-1 MSD failed the recovery criteria for the following analyte(s): Nitrate as N. Matrix interference is suspected. Method 6020: 560-46829-D-2-C MS failed the recovery criteria for the following analyte(s): Chromium. Matrix interference is suspected. Method 6020: 560-46829-D-2-D MSD failed the recovery criteria for the following analyte(s): Chromium. Matrix interference is suspected.

1. Items identified by the letter “R” must be included in the laboratory data package submitted 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).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica - Corpus Christi

TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	10/01/2013 - 3Q13
METHOD NUMBER:	6020/200.8
METHOD DESCRIPTION:	ICPMS
PREP METHOD:	3010A
INSTRUMENT:	Agilent ICPMS

		SPIKE RANGE				
ANALYTE	CURRENT MDL (ug/L)	MINIMUM (ug/L)	MAXIMUM (ug/L)	SPIKE (ug/L)	MEAS VALUE (ug/L)	ANALYTE IS DETECTED
Aluminum	22.5	22.5	67.5	100	52.2	yes
Antimony	1.61	1.61	4.83	4	1.98	yes
Arsenic	1.09	1.09	3.27	4	1.63	yes
Barium	0.81	0.81	2.43	4	3.19	yes
Beryllium	1.24	1.24	3.72	5	2.17	yes
Boron	70	70	210	100	109	yes
Cadmium	0.854	0.854	2.562	4	1.36	yes
Calcium	198	198	594	400	265	yes
Chromium	1.4	1.4	4.2	5	2.52	yes
Cobalt	1.36	1.36	4.08	4	1.62	yes
Copper	2	2	6	4	37.5	yes
Iron	101	101	303	200	169	yes
Lead	0.733	0.733	2.199	4	1.66	yes
Lithium	2.26	2.26	6.78	5	2.48	yes
Magnesium	113	113	339	200	142	yes
Manganese	11.6	11.6	34.8	40	25.4	yes
Molybdenum	1.4	1.4	4.2	4	1.75	yes
Nickel	2.17	2.17	6.51	4	7.11	yes
Phosphorus	18.1	18.1	54.3	40	35.2	yes
Potassium	407	407	1221	1000	632	yes
Selenium	1.08	1.08	3.24	2	1.61	yes
Silicon	62.8	62.8	188.4	200	2070	yes
Silver	0.941	0.941	2.823	4	1.9	yes
Sodium	727	727	2181	2000	1730	yes
Strontium	0.768	0.768	2.304	4	1.84	yes
Thallium	0.693	0.693	2.079	2	1.51	yes
Tin	5.08	5.08	15.24	10	6.42	yes
Titanium	1.53	1.53	4.59	4	1.68	yes
Vanadium	1.44	1.44	4.32	4	3.67	yes
Zinc	3.55	3.55	10.65	4	8.92	yes

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	12/30/2013 - 4Q13
METHOD NUMBER:	8260B
METHOD DESCRIPTION:	GC/MS
PREP METHOD:	5030B
INSTRUMENT:	VGCMS # 1

ANALYTE	CURRENT MDL (ug/L)	SPIKE RANGE MINIMUM (ug/L)	SPIKE RANGE MAXIMUM (ug/L)	SPIKE (ug/L)	MEAS VALUE (ug/L)	ANALYTE IS DETECTED
1,1,1,2-Tetrachloroethane	0.209	0.209	0.627	0.5	0.415	yes
1,1,1-Trichloroethane	0.3	0.3	0.9	0.5	0.411	yes
1,1,2,2-Tetrachloroethane	0.19	0.19	0.57	0.5	0.361	yes
1,1,2-Trichloro-1,2,2-trifluoroethane	0.278	0.278	0.834	0.5	0.418	yes
1,1,2-Trichloroethane	0.173	0.173	0.519	0.5	0.451	yes
1,1-Dichloroethane	0.168	0.168	0.504	0.5	0.503	yes
1,1-Dichloroethene	0.3	0.3	0.9	0.5	0.514	yes
1,1-Dichloropropene	0.185	0.185	0.555	0.5	0.582	yes
1,2,3-Trichlorobenzene	0.217	0.217	0.651	0.5	0.425	yes
1,2,3-Trichloropropane	0.191	0.191	0.573	0.5	0.293	yes
1,2,4-Trichlorobenzene	0.168	0.168	0.504	0.5	0.435	yes
1,2,4-Trimethylbenzene	0.2	0.2	0.6	0.5	0.361	yes
1,2-Dibromo-3-Chloropropane	0.349	0.349	1.047	1	0.597	yes
1,2-Dibromoethane	0.15	0.15	0.45	0.3	0.165	yes
1,2-Dichlorobenzene	0.117	0.117	0.351	0.3	0.317	yes
1,2-Dichloroethane	0.16	0.16	0.48	0.5	0.47	yes
1,2-Dichloropropane	0.173	0.173	0.519	0.5	0.442	yes
1,3,5-Trichlorobenzene	0.203	0.203	0.609	0.3	0.322	yes
1,3,5-Trimethylbenzene	0.2	0.2	0.6	0.3	0.227	yes
1,3-Dichlorobenzene	0.128	0.128	0.384	0.3	0.291	yes
1,3-Dichloropropane	0.146	0.146	0.438	0.3	0.204	yes
1,4-Dichlorobenzene	0.2	0.2	0.6	0.3	0.341	yes
1,4-Dioxane	7.46	7.46	22.38	20	9.06	yes
1-Chlorohexane	0.5	0.5	1.5	1	2.31	yes
1-Octene	0.44	0.44	1.32	1	0.447	yes
2,2-Dichloropropane	0.335	0.335	1.005	1	1.07	yes
2-Chloro-1,3-butadiene	0.2	0.2	0.6	0.5	0.46	yes
2-Chloroethyl vinyl ether	0.191	0.191	0.573	1	1.27	yes
2-Chlorotoluene	0.155	0.155	0.465	0.3	0.244	yes
2-Hexanone	0.2	0.2	0.6	1	0.564	yes
2-Nitropropane	0.225	0.225	0.675	1	4.17	yes
4-Chlorotoluene	0.242	0.242	0.726	0.5	0.41	yes
4-Isopropyltoluene	0.15	0.15	0.45	0.3	0.241	yes
4-Methyl-2-pentanone (MIBK)	0.116	0.116	0.348	0.3	0.124	yes
Acetone	5	5	15	5	5.94	yes
Acetonitrile	10	10	30	20	19.7	yes
Acrolein	5	5	15	10	14.4	yes
Acrylonitrile	1.93	1.93	5.79	5	7.56	yes
Allyl chloride	0.421	0.421	1.263	0.5	0.5	yes
Benzene	0.14	0.14	0.42	0.3	0.353	yes
Benzyl chloride	0.278	0.278	0.834	0.5	3.05	yes
Bromobenzene	0.128	0.128	0.384	0.3	0.25	yes
Bromodichloromethane	0.175	0.175	0.525	0.3	0.246	yes
Bromoform	0.5	0.5	1.5	1	0.673	yes
Bromomethane	0.392	0.392	1.176	0.5	0.548	yes
Butadiene	0.3	0.3	0.9	0.5	0.782	yes
Carbon disulfide	0.5	0.5	1.5	0.5	0.606	yes
Carbon tetrachloride	0.251	0.251	0.753	0.5	0.487	yes
Chlorobenzene	0.136	0.136	0.408	0.3	0.299	yes
Chlorobromomethane	0.228	0.228	0.684	0.5	0.398	yes
Chlorodibromomethane	0.223	0.223	0.669	0.5	0.737	yes
Chloroethane	0.4	0.4	1.2	0.5	0.545	yes
Chloroform	0.173	0.173	0.519	0.3	0.293	yes
Chloromethane	0.39	0.39	1.17	0.5	0.686	yes
cis-1,2-Dichloroethene	0.121	0.121	0.363	0.3	0.276	yes
cis-1,3-Dichloropropene	0.146	0.146	0.438	0.3	0.588	yes
cis-1,4-Dichloro-2-butene	0.5	0.5	1.5	0.5	9.63	yes

Cyclohexane	1	1	3	2	1.71	yes
Cyclohexanone	5	5	15	10	6.21	yes
Dibromomethane	0.165	0.165	0.495	0.5	0.499	yes
Dichlorodifluoromethane	0.429	0.429	1.287	1	1.08	yes
Ethyl acetate	1	1	3	1	3	yes
Ethyl ether	0.135	0.135	0.405	0.5	0.356	yes
Ethyl methacrylate	0.5	0.5	1.5	1	0.769	yes
Ethylbenzene	0.2	0.2	0.6	0.3	0.26	yes
Ethylene Oxide	9.2	9.2	27.6	20	13.1	yes
Hexachlorobutadiene	0.86	0.86	2.58	1	0.973	yes
Hexane	2	2	6	5	4.13	yes
Iodomethane	0.223	0.223	0.669	0.3	0.303	yes
Isobutyl alcohol	3.39	3.39	10.17	40	41.7	yes
Isooctane	0.5	0.5	1.5	1	0.799	yes
Isopropylbenzene	0.2	0.2	0.6	0.3	0.246	yes
m-Xylene & p-Xylene	0.26	0.26	0.78	2	1.94	yes
Methacrylonitrile	1.55	1.55	4.65	10	9.93	yes
Methyl ethyl ketone (MEK)	1	1	3	1	2.03	yes
Methyl methacrylate	0.196	0.196	0.588	1	0.827	yes
Methyl tert-butyl ether	0.2	0.2	0.6	0.3	0.319	yes
Methylene Chloride	2	2	6	2	2.29	yes
n-Butylbenzene	0.2	0.2	0.6	0.3	0.265	yes
n-Heptane	0.3	0.3	0.9	0.5	0.376	yes
N-Propylbenzene	0.106	0.106	0.318	0.3	0.247	yes
Naphthalene	0.2	0.2	0.6	0.5	0.296	yes
o-Xylene	0.2	0.2	0.6	0.3	0.26	yes
Pentachloroethane	0.302	0.302	0.906	1	0.772	yes
Propionitrile	2.69	2.69	8.07	10	10.3	yes
sec-Butylbenzene	0.3	0.3	0.9	0.5	0.373	yes
Styrene	0.2	0.2	0.6	0.5	0.668	yes
tert-Butylbenzene	0.2	0.2	0.6	0.3	0.233	yes
Tetrachloroethene	0.189	0.189	0.567	0.3	0.289	yes
Toluene	0.3	0.3	0.9	0.3	0.352	yes
trans-1,2-Dichloroethene	0.2	0.2	0.6	0.5	0.436	yes
trans-1,3-Dichloropropene	0.2	0.2	0.6	0.3	0.65	yes
trans-1,4-Dichloro-2-butene	0.5	0.5	1.5	1	0.598	yes
Trichloroethene	0.317	0.317	0.951	0.5	0.48	yes
Trichlorofluoromethane	0.244	0.244	0.732	0.5	0.494	yes
Vinyl acetate	0.3	0.3	0.9	1	2.72	yes
Vinyl chloride	0.3	0.3	0.9	0.5	0.58	yes
Xylenes, Total	0.226	0.226	0.678	0.9	0.798	yes

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica - Corpus Christi

TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	1Q13
LAB:	organic Chemistry (Wet Lab
JOB #:	560-33719-1

ANALYTE	CURRENT MDL (mg/L)	SPIKE RANGE MINIMUM (mg/L)	SPIKE RANGE MAXIMUM (mg/L)	SPIKE (mg/L)	MEAS VALUE (mg/L)	ANALYTE IS DETECTED
Alkalinity, Titration Method 2320B	1.29	1.29	3.87	3	0.6	yes
Ammonia (as Nitrogen) Method 350.1 by SEAL AQ2	0.045	0.045	0.135	0.1	0.27	yes
Chemical Oxygen Demand (COD) Colorimetric by HACH8000	3.11	3.11	9.33	10	17.5	yes
HEM (Oil & Grease) 1664A_NP	0.78	0.78	2.34	1.96	1.5	yes
Total Organic Carbon (TOC) by SM5310B	0.285	0.285	0.855	0.5	0.693	yes
EPA 300 Anions, Ion Chromotography						
Bromide	0.315	0.315	0.945	0.5	0.829	yes
Chloride	0.192	0.192	0.576	0.5	0.567	yes
Nitrate as N	0.103	0.103	0.309	0.2	0.45	yes
Nitrate Nitrite as N	0.2	0.2	0.6	0.4	0.785	yes
Nitrite as N	0.2	0.2	0.6	0.2	0.335	yes
Sulfate	0.377	0.377	1.131	1	1.68	yes
Chloride by 325.2	5	5	15	5	5	yes
Cyanide, Total 335.4	0.0082	0.0082	0.0246	0.02	0.0339	yes
Orthophosphate as P by 365.3	0.0141	0.0141	0.0423	0.03	0.031	yes
Sulfide by 376.2	0.0131	0.0131	0.0393	0.0301	0.019	yes
Ferrous Iron by SM3500 FeD	0.022	0.022	0.066	0.05	0.043	yes
Chlorine, Total Residual	0.0766	0.0766	0.2298	0.1	0.15	yes
Fluoride (Ion -selective electrode) by SM4500 F C	0.02	0.02	0.06	0.05	0.0624	yes
Nitrite as N by SM4500 NO2 B	0.002	0.002	0.006	0.005	0.005	yes
Sulfite by SM4500 SO3 B	2	2	6	2	2	yes
MBAS by SM5540C	0.036	0.036	0.108	0.05	0.054	yes

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-46903-1
Client Project/Site: Elementis AOC Groundwater

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
5/21/2014 6:23:09 PM
Sophia Shah, Project Management Assistant I
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Designee for

Neal Salcher, Senior Project Manager
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LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.

GC VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
U	Analyte was not detected at or above the SDL.

General Chemistry

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 560-46903-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-46903-1

Comments
No additional comments.

Receipt
The samples were received on 4/22/2014 8:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 2.0º C.

Detection Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46903-1

Client Sample ID: AOC-EMWL37T-0414 — Lab Sample ID: 560-46903-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	6.15		1.00	0.140	ug/L	1		8260B	Total/NA
Methane	8.45		1.00	0.357	ug/L	1		RSK-175	Total/NA
Chloride	17900		5000	960	mg/L	5000		300.0	Total/NA
Sulfate	1250		100	37.7	mg/L	100		300.0	Total/NA
Sulfide	0.0530		0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	198		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	198		5.00	5.00	mg/L	1		SM 2320B	Total/NA

Client Sample ID: AOC-TB04 — Lab Sample ID: 560-46903-2

No Detections.

Client Sample ID: AOC-EMWL38T-0414 — Lab Sample ID: 560-46903-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Methane	0.969	J	1.00	0.357	ug/L	1		RSK-175	Total/NA
Chloride	23300		5000	960	mg/L	5000		300.0	Total/NA
Sulfate	1830		100	37.7	mg/L	100		300.0	Total/NA
Sulfide	0.0610		0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	175		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	175		5.00	5.00	mg/L	1		SM 2320B	Total/NA

Client Sample ID: AOC-EMWL41T-0414 — Lab Sample ID: 560-46903-4

No Detections.

Client Sample ID: AOC-EMWL6T-0414 — Lab Sample ID: 560-46903-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.228	J	1.00	0.140	ug/L	1		8260B	Total/NA
Methane	15.4		1.00	0.357	ug/L	1		RSK-175	Total/NA
Chloride	19600		5000	960	mg/L	5000		300.0	Total/NA
Sulfate	2270		100	37.7	mg/L	100		300.0	Total/NA
Sulfide	0.109		0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	196		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	196		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Ferrous Iron	0.0830	J HF	0.200	0.0220	mg/L	1		SM 3500 FE D	Total/NA

Client Sample ID: AOC-EMWL6T-0414-1 — Lab Sample ID: 560-46903-6

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.209	J	1.00	0.140	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46903-1

Client Sample ID: AOC-EMWL37T-0414

Lab Sample ID: 560-46903-1

Date Collected: 04/21/14 13:45
Matrix: Water
Date Received: 04/22/14 08:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**6.15**		1.00	0.140	ug/L			04/24/14 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/24/14 17:46*	*1*
4-Bromofluorobenzene (Surr)	*117*		*70 - 130*		*04/24/14 17:46*	*1*
Dibromofluoromethane (Surr)	*97*		*69 - 130*		*04/24/14 17:46*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*04/24/14 17:46*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**8.45**		1.00	0.357	ug/L			05/02/14 16:43	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**17900**		5000	960	mg/L			04/24/14 19:36	5000
Nitrate as N	10.3	U	50.0	10.3	mg/L			04/22/14 14:52	100
Nitrite as N	20.0	U	50.0	20.0	mg/L			04/22/14 14:52	100
Sulfate	**1250**		100	37.7	mg/L			04/22/14 14:52	100
Sulfide	**0.0530**		0.0500	0.0131	mg/L			04/22/14 09:30	1
Total Alkalinity as CaCO3	**198**		5.00	5.00	mg/L			05/01/14 09:15	1
Bicarbonate Alkalinity as CaCO3	**198**		5.00	5.00	mg/L			05/01/14 09:15	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Ferrous Iron	0.0220	U HF	0.200	0.0220	mg/L			04/24/14 15:30	1

Client Sample ID: AOC-TB04

Lab Sample ID: 560-46903-2

Date Collected: 04/21/14 13:00
Matrix: Water
Date Received: 04/22/14 08:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/24/14 18:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/24/14 18:11*	*1*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*		*04/24/14 18:11*	*1*
Dibromofluoromethane (Surr)	*96*		*69 - 130*		*04/24/14 18:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*		*04/24/14 18:11*	*1*

Client Sample ID: AOC-EMWL38T-0414

Lab Sample ID: 560-46903-3

Date Collected: 04/21/14 15:20
Matrix: Water
Date Received: 04/22/14 08:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/24/14 18:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/24/14 18:36*	*1*
4-Bromofluorobenzene (Surr)	*118*		*70 - 130*		*04/24/14 18:36*	*1*

Client Sample ID: AOC-EMWL38T-0414

Lab Sample ID: 560-46903-3

Date Collected: 04/21/14 15:20

Matrix: Water

Date Received: 04/22/14 08:10

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*97*		*69 - 130*		*04/24/14 18:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*		*04/24/14 18:36*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.969**	**J**	1.00	0.357	ug/L			05/02/14 16:54	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**23300**		5000	960	mg/L			04/24/14 19:58	5000
Nitrate as N	10.3	U	50.0	10.3	mg/L			04/22/14 15:14	100
Nitrite as N	20.0	U	50.0	20.0	mg/L			04/22/14 15:14	100
Sulfate	**1830**		100	37.7	mg/L			04/22/14 15:14	100
Sulfide	**0.0610**		0.0500	0.0131	mg/L			04/22/14 09:30	1
Total Alkalinity as CaCO3	**175**		5.00	5.00	mg/L			05/01/14 09:15	1
Bicarbonate Alkalinity as CaCO3	**175**		5.00	5.00	mg/L			05/01/14 09:15	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Ferrous Iron	0.0220	U HF	0.200	0.0220	mg/L			04/24/14 15:30	1

Client Sample ID: AOC-EMWL41T-0414

Lab Sample ID: 560-46903-4

Date Collected: 04/21/14 16:25

Matrix: Water

Date Received: 04/22/14 08:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/24/14 19:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/24/14 19:01*	*1*
4-Bromofluorobenzene (Surr)	*119*		*70 - 130*		*04/24/14 19:01*	*1*
Dibromofluoromethane (Surr)	*97*		*69 - 130*		*04/24/14 19:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*		*04/24/14 19:01*	*1*

Client Sample ID: AOC-EMWL6T-0414

Lab Sample ID: 560-46903-5

Date Collected: 04/21/14 17:30

Matrix: Water

Date Received: 04/22/14 08:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.228**	**J**	1.00	0.140	ug/L			04/24/14 19:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*04/24/14 19:26*	*1*
4-Bromofluorobenzene (Surr)	*116*		*70 - 130*		*04/24/14 19:26*	*1*
Dibromofluoromethane (Surr)	*104*		*69 - 130*		*04/24/14 19:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*04/24/14 19:26*	*1*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46903-1

Client Sample ID: AOC-EMWL6T-0414

Lab Sample ID: 560-46903-5
Matrix: Water

Date Collected: 04/21/14 17:30
Date Received: 04/22/14 08:10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**15.4**		1.00	0.357	ug/L			05/02/14 17:06	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**19600**		5000	960	mg/L			04/24/14 20:20	5000
Nitrate as N	10.3	U	50.0	10.3	mg/L			04/22/14 15:36	100
Nitrite as N	20.0	U	50.0	20.0	mg/L			04/22/14 15:36	100
Sulfate	**2270**		100	37.7	mg/L			04/22/14 15:36	100
Sulfide	**0.109**		0.0500	0.0131	mg/L			04/22/14 09:30	1
Total Alkalinity as CaCO3	**196**		5.00	5.00	mg/L			05/01/14 09:15	1
Bicarbonate Alkalinity as CaCO3	**196**		5.00	5.00	mg/L			05/01/14 09:15	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 09:15	1
Ferrous Iron	**0.0830**	**J HF**	0.200	0.0220	mg/L			04/24/14 15:30	1

Client Sample ID: AOC-EMWL6T-0414-1

Lab Sample ID: 560-46903-6
Matrix: Water

Date Collected: 04/21/14 17:30
Date Received: 04/22/14 08:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.209**	**J**	1.00	0.140	ug/L			04/24/14 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/24/14 19:51*	*1*
4-Bromofluorobenzene (Surr)	*117*		*70 - 130*		*04/24/14 19:51*	*1*
Dibromofluoromethane (Surr)	*106*		*69 - 130*		*04/24/14 19:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*		*04/24/14 19:51*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 560-101211/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101211

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/24/14 11:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/24/14 11:20*	*1*
4-Bromofluorobenzene (Surr)	*115*		*70 - 130*		*04/24/14 11:20*	*1*
Dibromofluoromethane (Surr)	*94*		*69 - 130*		*04/24/14 11:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 140*		*04/24/14 11:20*	*1*

Lab Sample ID: LCS 560-101211/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101211

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	25.07		ug/L		100	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*

Lab Sample ID: 560-46859-A-1-C MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 101211

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	1.40	U	250	246.3		ug/L		99	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 140*

Lab Sample ID: 560-46859-A-1-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 101211

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	1.40	U	250	253.2		ug/L		101	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*70 - 130*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 600-133532/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133532

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.357	U	1.00	0.357	ug/L			05/02/14 11:22	1

Lab Sample ID: LCS 600-133532/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133532

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	3.44	2.734		ug/L		79	70 - 130

Lab Sample ID: 560-46919-F-5 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133532

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	0.584	J	5.16	4.797		ug/L		82	70 - 130

Lab Sample ID: 560-46919-F-5 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133532

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	0.584	J	5.16	4.255		ug/L		71	70 - 130	12	30

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 560-101175/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101175

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.192	U	1.00	0.192	mg/L			04/22/14 12:40	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/22/14 12:40	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/22/14 12:40	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/22/14 12:40	1

Lab Sample ID: LCS 560-101175/5 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101175

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.807		mg/L		98	90 - 110
Nitrate as N	5.00	4.966		mg/L		99	90 - 110
Nitrite as N	5.00	5.029		mg/L		101	90 - 110
Sulfate	20.0	20.17		mg/L		101	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 560-46824-D-4 MS ^50 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101175

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	466		500	1019		mg/L		111	80 - 120
Nitrate as N	5.15	U	250	269.1		mg/L		108	80 - 120
Nitrite as N	10.0	U	250	272.5		mg/L		109	80 - 120
Sulfate	18.9	U	1000	987.5		mg/L		99	80 - 120

Lab Sample ID: 560-46824-D-4 MSD ^50 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101175

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	466		500	997.5		mg/L		106	80 - 120	2	20
Nitrate as N	5.15	U	250	227.4		mg/L		91	80 - 120	17	20
Nitrite as N	10.0	U	250	243.7		mg/L		97	80 - 120	11	20
Sulfate	18.9	U	1000	971.8		mg/L		97	80 - 120	2	20

Lab Sample ID: MB 560-101272/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.8180	J	1.00	0.192	mg/L			04/24/14 11:10	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/24/14 11:10	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/24/14 11:10	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/24/14 11:10	1

Lab Sample ID: LCS 560-101272/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.886		mg/L		99	90 - 110
Nitrate as N	5.00	4.989		mg/L		100	90 - 110
Nitrite as N	5.00	4.957		mg/L		99	90 - 110
Sulfate	20.0	20.56		mg/L		103	90 - 110

Lab Sample ID: 560-46970-D-4 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	1670	b	1000	2915	N1	mg/L		124	80 - 120
Nitrate as N	52.5		500	342.8	N1	mg/L		58	80 - 120
Nitrite as N	20.0	U	500	497.1		mg/L		99	80 - 120
Sulfate	257		2000	1135	N1	mg/L		44	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 560-46970-D-4 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	1670	b	1000	2872		mg/L		120	80 - 120	2	20
Nitrate as N	52.5		500	360.7	N1	mg/L		62	80 - 120	5	20
Nitrite as N	20.0	U	500	453.1		mg/L		91	80 - 120	9	20
Sulfate	257		2000	1154	N1	mg/L		45	80 - 120	2	20

Method: 376.2 - Sulfide

Lab Sample ID: MB 560-101191/33 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/22/14 09:30	1

Lab Sample ID: LCS 560-101191/34 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.501	0.5020		mg/L		100	80 - 120

Lab Sample ID: 560-46824-K-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.0131	U	0.501	0.4900		mg/L		98	75 - 125

Lab Sample ID: 560-46824-K-1 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101191

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide	0.0131	U	0.501	0.4950		mg/L		99	75 - 125	1	20

Method: SM 2320B - Alkalinity

Lab Sample ID: LCS 560-101538/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	100	99.80		mg/L		100	85 - 115

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: 560-46903-1 MS — **Client Sample ID: AOC-EMWL37T-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	198		100	292.0		mg/L		94	75 - 125

Lab Sample ID: 560-46903-1 MSD — **Client Sample ID: AOC-EMWL37T-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Alkalinity as CaCO3	198		100	293.0		mg/L		95	75 - 125	0	20

Method: SM 3500 FE D - Iron, Ferrous

Lab Sample ID: MB 560-101488/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101488

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Ferrous Iron	0.0220	U	0.200	0.0220	mg/L			04/24/14 15:30	1

Lab Sample ID: LCS 560-101488/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101488

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ferrous Iron	0.800	0.7920		mg/L		99	80 - 120

Lab Sample ID: 560-46919-D-5 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101488

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ferrous Iron	0.105	J	0.800	1.113	N1	mg/L		126	75 - 125

Lab Sample ID: 560-46919-D-5 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101488

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ferrous Iron	0.105	J	0.800	1.108		mg/L		125	75 - 125	0	20

QC Association Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46903-1

GC/MS VOA

Leach Batch: 101151

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46859-A-1-C MS	Matrix Spike	TCLP	Water	1311	
560-46859-A-1-C MSD	Matrix Spike Duplicate	TCLP	Water	1311	

Analysis Batch: 101211

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46859-A-1-C MS	Matrix Spike	TCLP	Water	8260B	101151
560-46859-A-1-C MSD	Matrix Spike Duplicate	TCLP	Water	8260B	101151
560-46903-1	AOC-EMWL37T-0414	Total/NA	Water	8260B	
560-46903-2	AOC-TB04	Total/NA	Water	8260B	
560-46903-3	AOC-EMWL38T-0414	Total/NA	Water	8260B	
560-46903-4	AOC-EMWL41T-0414	Total/NA	Water	8260B	
560-46903-5	AOC-EMWL6T-0414	Total/NA	Water	8260B	
560-46903-6	AOC-EMWL6T-0414-1	Total/NA	Water	8260B	
LCS 560-101211/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-101211/8	Method Blank	Total/NA	Water	8260B	

GC VOA

Analysis Batch: 133532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46903-1	AOC-EMWL37T-0414	Total/NA	Water	RSK-175	
560-46903-3	AOC-EMWL38T-0414	Total/NA	Water	RSK-175	
560-46903-5	AOC-EMWL6T-0414	Total/NA	Water	RSK-175	
560-46919-F-5 MS	Matrix Spike	Total/NA	Water	RSK-175	
560-46919-F-5 MSD	Matrix Spike Duplicate	Total/NA	Water	RSK-175	
LCS 600-133532/3	Lab Control Sample	Total/NA	Water	RSK-175	
MB 600-133532/2	Method Blank	Total/NA	Water	RSK-175	

General Chemistry

Analysis Batch: 101175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46824-D-4 MS ^50	Matrix Spike	Total/NA	Water	300.0	
560-46824-D-4 MSD ^50	Matrix Spike Duplicate	Total/NA	Water	300.0	
560-46903-1	AOC-EMWL37T-0414	Total/NA	Water	300.0	
560-46903-3	AOC-EMWL38T-0414	Total/NA	Water	300.0	
560-46903-5	AOC-EMWL6T-0414	Total/NA	Water	300.0	
LCS 560-101175/5	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101175/4	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 101191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46824-K-1 MS	Matrix Spike	Total/NA	Water	376.2	
560-46824-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	376.2	
560-46903-1	AOC-EMWL37T-0414	Total/NA	Water	376.2	
560-46903-3	AOC-EMWL38T-0414	Total/NA	Water	376.2	
560-46903-5	AOC-EMWL6T-0414	Total/NA	Water	376.2	
LCS 560-101191/34	Lab Control Sample	Total/NA	Water	376.2	
MB 560-101191/33	Method Blank	Total/NA	Water	376.2	

General Chemistry (Continued)

Analysis Batch: 101272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46903-1	AOC-EMWL37T-0414	Total/NA	Water	300.0	
560-46903-3	AOC-EMWL38T-0414	Total/NA	Water	300.0	
560-46903-5	AOC-EMWL6T-0414	Total/NA	Water	300.0	
560-46970-D-4 MS	Matrix Spike	Total/NA	Water	300.0	
560-46970-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	
LCS 560-101272/4	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101272/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 101488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46903-1	AOC-EMWL37T-0414	Total/NA	Water	SM 3500 FE D	
560-46903-3	AOC-EMWL38T-0414	Total/NA	Water	SM 3500 FE D	
560-46903-5	AOC-EMWL6T-0414	Total/NA	Water	SM 3500 FE D	
560-46919-D-5 MS	Matrix Spike	Total/NA	Water	SM 3500 FE D	
560-46919-D-5 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 3500 FE D	
LCS 560-101488/4	Lab Control Sample	Total/NA	Water	SM 3500 FE D	
MB 560-101488/3	Method Blank	Total/NA	Water	SM 3500 FE D	

Analysis Batch: 101538

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46903-1	AOC-EMWL37T-0414	Total/NA	Water	SM 2320B	
560-46903-1 MS	AOC-EMWL37T-0414	Total/NA	Water	SM 2320B	
560-46903-1 MSD	AOC-EMWL37T-0414	Total/NA	Water	SM 2320B	
560-46903-3	AOC-EMWL38T-0414	Total/NA	Water	SM 2320B	
560-46903-5	AOC-EMWL6T-0414	Total/NA	Water	SM 2320B	
LCS 560-101538/14	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46903-1

Client Sample ID: AOC-EMWL37T-0414 — Lab Sample ID: 560-46903-1

Date Collected: 04/21/14 13:45 — **Matrix: Water**
Date Received: 04/22/14 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101211	04/24/14 17:46	RP56	TAL CC
Total/NA	Analysis	RSK-175		1	133532	05/02/14 16:43	JPS	TAL HOU
Total/NA	Analysis	300.0		100	101175	04/22/14 14:52	HMZ	TAL CC
Total/NA	Analysis	300.0		5000	101272	04/24/14 19:36	JEM	TAL CC
Total/NA	Analysis	376.2		1	101191	04/22/14 09:30	HMZ	TAL CC
Total/NA	Analysis	SM 2320B		1	101538	05/01/14 09:15	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101488	04/24/14 15:30	LPO	TAL CC

Client Sample ID: AOC-TB04 — Lab Sample ID: 560-46903-2

Date Collected: 04/21/14 13:00 — **Matrix: Water**
Date Received: 04/22/14 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101211	04/24/14 18:11	RP56	TAL CC

Client Sample ID: AOC-EMWL38T-0414 — Lab Sample ID: 560-46903-3

Date Collected: 04/21/14 15:20 — **Matrix: Water**
Date Received: 04/22/14 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101211	04/24/14 18:36	RP56	TAL CC
Total/NA	Analysis	RSK-175		1	133532	05/02/14 16:54	JPS	TAL HOU
Total/NA	Analysis	300.0		100	101175	04/22/14 15:14	HMZ	TAL CC
Total/NA	Analysis	300.0		5000	101272	04/24/14 19:58	JEM	TAL CC
Total/NA	Analysis	376.2		1	101191	04/22/14 09:30	HMZ	TAL CC
Total/NA	Analysis	SM 2320B		1	101538	05/01/14 09:15	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101488	04/24/14 15:30	LPO	TAL CC

Client Sample ID: AOC-EMWL41T-0414 — Lab Sample ID: 560-46903-4

Date Collected: 04/21/14 16:25 — **Matrix: Water**
Date Received: 04/22/14 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101211	04/24/14 19:01	RP56	TAL CC

Client Sample ID: AOC-EMWL6T-0414 — Lab Sample ID: 560-46903-5

Date Collected: 04/21/14 17:30 — **Matrix: Water**
Date Received: 04/22/14 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101211	04/24/14 19:26	RP56	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46903-1

Client Sample ID: AOC-EMWL6T-0414

Lab Sample ID: 560-46903-5

Date Collected: 04/21/14 17:30

Matrix: Water

Date Received: 04/22/14 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	133532	05/02/14 17:06	JPS	TAL HOU
Total/NA	Analysis	300.0		100	101175	04/22/14 15:36	HMZ	TAL CC
Total/NA	Analysis	300.0		5000	101272	04/24/14 20:20	JEM	TAL CC
Total/NA	Analysis	376.2		1	101191	04/22/14 09:30	HMZ	TAL CC
Total/NA	Analysis	SM 2320B		1	101538	05/01/14 09:15	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101488	04/24/14 15:30	LPO	TAL CC

Client Sample ID: AOC-EMWL6T-0414-1

Lab Sample ID: 560-46903-6

Date Collected: 04/21/14 17:30

Matrix: Water

Date Received: 04/22/14 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101211	04/24/14 19:51	RP56	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Certification Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46903-1

Laboratory: TestAmerica Corpus Christi

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Bicarbonate Alkalinity as CaCO3
SM 2320B		Water	Carbonate Alkalinity as CaCO3
SM 2320B		Water	Hydroxide Alkalinity
SM 2320B		Water	Phenolphthalein Alkalinity
SM 2320B		Water	Total Alkalinity as CaCO3
SM 3500 FE D		Water	Ferrous Iron

Laboratory: TestAmerica Houston

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704223	10-31-14

Method Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46903-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC
RSK-175	Dissolved Gases (GC)	RSK	TAL HOU
300.0	Anions, Ion Chromatography	MCAWW	TAL CC
376.2	Sulfide	MCAWW	TAL CC
SM 2320B	Alkalinity	SM	TAL CC
SM 3500 FE D	Iron, Ferrous	SM	TAL CC

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46903-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-46903-1	AOC-EMWL37T-0414	Water	04/21/14 13:45	04/22/14 08:10
560-46903-2	AOC-TB04	Water	04/21/14 13:00	04/22/14 08:10
560-46903-3	AOC-EMWL38T-0414	Water	04/21/14 15:20	04/22/14 08:10
560-46903-4	AOC-EMWL41T-0414	Water	04/21/14 16:25	04/22/14 08:10
560-46903-5	AOC-EMWL6T-0414	Water	04/21/14 17:30	04/22/14 08:10
560-46903-6	AOC-EMWL6T-0414-1	Water	04/21/14 17:30	04/22/14 08:10

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAmerica

Client Information	Sampler: Liz Rinehart/John Sorkness	Lab PM: Salcher, Neal	Carrier Tracking No(s):	COC No: 560-13299-862.6
Client Contact: David Zuvanich	Phone: 210-219-1561	E-Mail: neal.salcher@testamericainc.com		Page: Page
Company: El Paso Energy Corporation				Job #:
Address: 1001 Louisiana Street Room S1905B	Due Date Requested:			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: WD# 208570			
Project Name: Elementis AOC Groundwater	Project #: 56000079			
Site:	SSOW#:			

Loc: 560
46903

Analysis Requested

Preservation Codes:
A - HCl
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - Benzene	SM4500S2D - Sulfide	E300.0 - SO4, NO2, NO3	SM3500 - Ferrous Fe, Alk	RSK175 - Methane	Total Number of containers	Special Instructions/Note:
				Preservation Code:			N	3C	N	N	A		
AOC-EMWL37T-0414	4/21/14	1345	G	Water	N	N	X	X	X	X	X	8	
AOC-TB04		1300		Water			X					2	
AOC-EMWL38T-0414		1520		Water			X	X	X	X	X	8	
AOC-EMWL41T-0414		1625		Water			X					3	
AOC-EMWL6T-0414		1730		Water			X	X	X	X	X	7	
AOC-EMWL6T-0414-1		1730		Water			X					3	
				Water									
				Water									
				Water									
				Water									
				Water									

560-46903 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	4-22-14 / 8:10	IRS		4/22/14 8:10	TACC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: Hot 1.9°C cor 2.0°C IRG

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-46903-1

Login Number: 46903
List Number: 1
Creator: Rood, Vivian R

List Source: TestAmerica Corpus Christi

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time.		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-46903-1

Login Number: 46903
List Number: 2
Creator: Culik, Marie E

List Source: TestAmerica Houston
List Creation: 04/23/14 03:16 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46903-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.140	ug/L	8260B

Method: RSK-175 - Dissolved Gases (GC)

Analyte	MQL	MDL	Units	Method
Methane	1.00	0.357	ug/L	RSK-175

General Chemistry

Analyte	MQL	MDL	Units	Method
Chloride	1.00	0.192	mg/L	300.0
Nitrate as N	0.500	0.103	mg/L	300.0
Nitrite as N	0.500	0.200	mg/L	300.0
Sulfate	1.00	0.377	mg/L	300.0
Sulfide	0.0500	0.0131	mg/L	376.2
Bicarbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Carbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Hydroxide Alkalinity	5.00	5.00	mg/L	SM 2320B
Phenolphthalein Alkalinity	5.00	5.00	mg/L	SM 2320B
Total Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Ferrous Iron	0.200	0.0220	mg/L	SM 3500 FE D

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-46903-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Sophia Shah		5/21/2014
Name (printed)	Signature	Date

Project Management Assistant
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/21/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46903-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?		X			R03A
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			R07C
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		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" must be included in the laboratory data package submitted 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 Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/21/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46903-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?	X				
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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.
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Laboratory Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/21/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46903-1
Reviewer Name:	Neal Salcher		

ER #[1]	Description
R03A	Method SM 3500 FE D: The following sample(s) was received outside of holding time: Method: 560-46903-1,3,5.
R07C	Method 300.0: 560-46970-D-4 MS failed the recovery criteria for the following analyte(s): Chloride, Nitrate as N, Sulfate. Matrix interference is suspected. Method 300.0: 560-46970-D-4 MSD failed the recovery criteria for the following analyte(s): Nitrate as N, Sulfate. Matrix interference is suspected. Method SM 3500 FE D: The matrix spike (MS) recoveries for batch 101488 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.Method: 3500 Fe D

1. Items identified by the letter “R” must be included in the laboratory data package submitted 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).

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	12/30/2013 - 4Q13
METHOD NUMBER:	8260B
METHOD DESCRIPTION:	GC/MS
PREP METHOD:	5030B
INSTRUMENT:	VGCMS # 1

ANALYTE	CURRENT MDL (ug/L)	SPIKE RANGE MINIMUM (ug/L)	SPIKE RANGE MAXIMUM (ug/L)	SPIKE (ug/L)	MEAS VALUE (ug/L)	ANALYTE IS DETECTED
1,1,1,2-Tetrachloroethane	0.209	0.209	0.627	0.5	0.415	yes
1,1,1-Trichloroethane	0.3	0.3	0.9	0.5	0.411	yes
1,1,2,2-Tetrachloroethane	0.19	0.19	0.57	0.5	0.361	yes
1,1,2-Trichloro-1,2,2-trifluoroethane	0.278	0.278	0.834	0.5	0.418	yes
1,1,2-Trichloroethane	0.173	0.173	0.519	0.5	0.451	yes
1,1-Dichloroethane	0.168	0.168	0.504	0.5	0.503	yes
1,1-Dichloroethene	0.3	0.3	0.9	0.5	0.514	yes
1,1-Dichloropropene	0.185	0.185	0.555	0.5	0.582	yes
1,2,3-Trichlorobenzene	0.217	0.217	0.651	0.5	0.425	yes
1,2,3-Trichloropropane	0.191	0.191	0.573	0.5	0.293	yes
1,2,4-Trichlorobenzene	0.168	0.168	0.504	0.5	0.435	yes
1,2,4-Trimethylbenzene	0.2	0.2	0.6	0.5	0.361	yes
1,2-Dibromo-3-Chloropropane	0.349	0.349	1.047	1	0.597	yes
1,2-Dibromoethane	0.15	0.15	0.45	0.3	0.165	yes
1,2-Dichlorobenzene	0.117	0.117	0.351	0.3	0.317	yes
1,2-Dichloroethane	0.16	0.16	0.48	0.5	0.47	yes
1,2-Dichloropropane	0.173	0.173	0.519	0.5	0.442	yes
1,3,5-Trichlorobenzene	0.203	0.203	0.609	0.3	0.322	yes
1,3,5-Trimethylbenzene	0.2	0.2	0.6	0.3	0.227	yes
1,3-Dichlorobenzene	0.128	0.128	0.384	0.3	0.291	yes
1,3-Dichloropropane	0.146	0.146	0.438	0.3	0.204	yes
1,4-Dichlorobenzene	0.2	0.2	0.6	0.3	0.341	yes
1,4-Dioxane	7.46	7.46	22.38	20	9.06	yes
1-Chlorohexane	0.5	0.5	1.5	1	2.31	yes
1-Octene	0.44	0.44	1.32	1	0.447	yes
2,2-Dichloropropane	0.335	0.335	1.005	1	1.07	yes
2-Chloro-1,3-butadiene	0.2	0.2	0.6	0.5	0.46	yes
2-Chloroethyl vinyl ether	0.191	0.191	0.573	1	1.27	yes
2-Chlorotoluene	0.155	0.155	0.465	0.3	0.244	yes
2-Hexanone	0.2	0.2	0.6	1	0.564	yes
2-Nitropropane	0.225	0.225	0.675	1	4.17	yes
4-Chlorotoluene	0.242	0.242	0.726	0.5	0.41	yes
4-Isopropyltoluene	0.15	0.15	0.45	0.3	0.241	yes
4-Methyl-2-pentanone (MIBK)	0.116	0.116	0.348	0.3	0.124	yes
Acetone	5	5	15	5	5.94	yes
Acetonitrile	10	10	30	20	19.7	yes
Acrolein	5	5	15	10	14.4	yes
Acrylonitrile	1.93	1.93	5.79	5	7.56	yes
Allyl chloride	0.421	0.421	1.263	0.5	0.5	yes
Benzene	0.14	0.14	0.42	0.3	0.353	yes
Benzyl chloride	0.278	0.278	0.834	0.5	3.05	yes
Bromobenzene	0.128	0.128	0.384	0.3	0.25	yes
Bromodichloromethane	0.175	0.175	0.525	0.3	0.246	yes
Bromoform	0.5	0.5	1.5	1	0.673	yes
Bromomethane	0.392	0.392	1.176	0.5	0.548	yes
Butadiene	0.3	0.3	0.9	0.5	0.782	yes
Carbon disulfide	0.5	0.5	1.5	0.5	0.606	yes
Carbon tetrachloride	0.251	0.251	0.753	0.5	0.487	yes
Chlorobenzene	0.136	0.136	0.408	0.3	0.299	yes
Chlorobromomethane	0.228	0.228	0.684	0.5	0.398	yes
Chlorodibromomethane	0.223	0.223	0.669	0.5	0.737	yes
Chloroethane	0.4	0.4	1.2	0.5	0.545	yes
Chloroform	0.173	0.173	0.519	0.3	0.293	yes
Chloromethane	0.39	0.39	1.17	0.5	0.686	yes
cis-1,2-Dichloroethene	0.121	0.121	0.363	0.3	0.276	yes
cis-1,3-Dichloropropene	0.146	0.146	0.438	0.3	0.588	yes
cis-1,4-Dichloro-2-butene	0.5	0.5	1.5	0.5	9.63	yes

Cyclohexane	1	1	3	2	1.71	yes
Cyclohexanone	5	5	15	10	6.21	yes
Dibromomethane	0.165	0.165	0.495	0.5	0.499	yes
Dichlorodifluoromethane	0.429	0.429	1.287	1	1.08	yes
Ethyl acetate	1	1	3	1	3	yes
Ethyl ether	0.135	0.135	0.405	0.5	0.356	yes
Ethyl methacrylate	0.5	0.5	1.5	1	0.769	yes
Ethylbenzene	0.2	0.2	0.6	0.3	0.26	yes
Ethylene Oxide	9.2	9.2	27.6	20	13.1	yes
Hexachlorobutadiene	0.86	0.86	2.58	1	0.973	yes
Hexane	2	2	6	5	4.13	yes
Iodomethane	0.223	0.223	0.669	0.3	0.303	yes
Isobutyl alcohol	3.39	3.39	10.17	40	41.7	yes
Isooctane	0.5	0.5	1.5	1	0.799	yes
Isopropylbenzene	0.2	0.2	0.6	0.3	0.246	yes
m-Xylene & p-Xylene	0.26	0.26	0.78	2	1.94	yes
Methacrylonitrile	1.55	1.55	4.65	10	9.93	yes
Methyl ethyl ketone (MEK)	1	1	3	1	2.03	yes
Methyl methacrylate	0.196	0.196	0.588	1	0.827	yes
Methyl tert-butyl ether	0.2	0.2	0.6	0.3	0.319	yes
Methylene Chloride	2	2	6	2	2.29	yes
n-Butylbenzene	0.2	0.2	0.6	0.3	0.265	yes
n-Heptane	0.3	0.3	0.9	0.5	0.376	yes
N-Propylbenzene	0.106	0.106	0.318	0.3	0.247	yes
Naphthalene	0.2	0.2	0.6	0.5	0.296	yes
o-Xylene	0.2	0.2	0.6	0.3	0.26	yes
Pentachloroethane	0.302	0.302	0.906	1	0.772	yes
Propionitrile	2.69	2.69	8.07	10	10.3	yes
sec-Butylbenzene	0.3	0.3	0.9	0.5	0.373	yes
Styrene	0.2	0.2	0.6	0.5	0.668	yes
tert-Butylbenzene	0.2	0.2	0.6	0.3	0.233	yes
Tetrachloroethene	0.189	0.189	0.567	0.3	0.289	yes
Toluene	0.3	0.3	0.9	0.3	0.352	yes
trans-1,2-Dichloroethene	0.2	0.2	0.6	0.5	0.436	yes
trans-1,3-Dichloropropene	0.2	0.2	0.6	0.3	0.65	yes
trans-1,4-Dichloro-2-butene	0.5	0.5	1.5	1	0.598	yes
Trichloroethene	0.317	0.317	0.951	0.5	0.48	yes
Trichlorofluoromethane	0.244	0.244	0.732	0.5	0.494	yes
Vinyl acetate	0.3	0.3	0.9	1	2.72	yes
Vinyl chloride	0.3	0.3	0.9	0.5	0.58	yes
Xylenes, Total	0.226	0.226	0.678	0.9	0.798	yes

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica - Corpus Christi

TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	1Q13
LAB:	organic Chemistry (Wet Lab
JOB #:	560-33719-1

ANALYTE	CURRENT MDL (mg/L)	SPIKE RANGE MINIMUM (mg/L)	SPIKE RANGE MAXIMUM (mg/L)	SPIKE (mg/L)	MEAS VALUE (mg/L)	ANALYTE IS DETECTED
Alkalinity, Titration Method 2320B	1.29	1.29	3.87	3	0.6	yes
Ammonia (as Nitrogen) Method 350.1 by SEAL AQ2	0.045	0.045	0.135	0.1	0.27	yes
Chemical Oxygen Demand (COD) Colorimetric by HACH8000	3.11	3.11	9.33	10	17.5	yes
HEM (Oil & Grease) 1664A_NP	0.78	0.78	2.34	1.96	1.5	yes
Total Organic Carbon (TOC) by SM5310B	0.285	0.285	0.855	0.5	0.693	yes
EPA 300 Anions, Ion Chromotography						
Bromide	0.315	0.315	0.945	0.5	0.829	yes
Chloride	0.192	0.192	0.576	0.5	0.567	yes
Nitrate as N	0.103	0.103	0.309	0.2	0.45	yes
Nitrate Nitrite as N	0.2	0.2	0.6	0.4	0.785	yes
Nitrite as N	0.2	0.2	0.6	0.2	0.335	yes
Sulfate	0.377	0.377	1.131	1	1.68	yes
Chloride by 325.2	5	5	15	5	5	yes
Cyanide, Total 335.4	0.0082	0.0082	0.0246	0.02	0.0339	yes
Orthophosphate as P by 365.3	0.0141	0.0141	0.0423	0.03	0.031	yes
Sulfide by 376.2	0.0131	0.0131	0.0393	0.0301	0.019	yes
Ferrous Iron by SM3500 FeD	0.022	0.022	0.066	0.05	0.043	yes
Chlorine, Total Residual	0.0766	0.0766	0.2298	0.1	0.15	yes
Fluoride (Ion -selective electrode) by SM4500 F C	0.02	0.02	0.06	0.05	0.0624	yes
Nitrite as N by SM4500 NO2 B	0.002	0.002	0.006	0.005	0.005	yes
Sulfite by SM4500 SO3 B	2	2	6	2	2	yes
MBAS by SM5540C	0.036	0.036	0.108	0.05	0.054	yes

Matrix: Water
Method: RSK_175
Prep Method: Pass
Date Analyzed: 3/4/2014
Job #: 600-87854
TALS Batch: 128709
Units: ug/L

Analyte	Instrument #	MDL	DCS Spike	Measured Result	MQL
Ethane	FID14	0.303	0.388	0.366	2
Ethylene	FID14	0.324	0.362	0.296	2
Methane	FID14	0.357	0.2064	0.280	2
Propane	FID14	0.746	0.5672	0.435	2
Propene	FID14	0.659	0.5432	0.513	2

DCS = Detection Check Standard
MQL = Method Quantitation Limit

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-46919-1
Client Project/Site: Elementis AOC Groundwater

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
5/19/2014 5:45:22 PM
Sophia Shah, Project Management Assistant I
sophia.shah@testamericainc.com

Designee for

Neal Salcher, Senior Project Manager
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LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.

GC VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
U	Analyte was not detected at or above the SDL.

General Chemistry

Qualifier	Qualifier Description
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
U	Analyte was not detected at or above the SDL.
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 560-46919-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-46919-1

Comments
No additional comments.

Receipt
The samples were received on 4/22/2014 4:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 2.4º C.

Detection Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46919-1

Client Sample ID: AOC-TB05 — Lab Sample ID: 560-46919-1

No Detections.

Client Sample ID: AOC-OWLO8-0414 — Lab Sample ID: 560-46919-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Methane	0.917	J	1.00	0.357	ug/L	1		RSK-175	Total/NA
Chloride	22300		500	96.0	mg/L	500		300.0	Total/NA
Sulfate	2260		50.0	18.9	mg/L	50		300.0	Total/NA
Sulfide	0.0160	J	0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	184		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	184		5.00	5.00	mg/L	1		SM 2320B	Total/NA

Client Sample ID: AOC-EMWL8T-0414 — Lab Sample ID: 560-46919-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Methane	4.26		1.00	0.357	ug/L	1		RSK-175	Total/NA
Chloride	23900		500	96.0	mg/L	500		300.0	Total/NA
Sulfate	2070		50.0	18.9	mg/L	50		300.0	Total/NA
Total Alkalinity as CaCO3	189		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	189		5.00	5.00	mg/L	1		SM 2320B	Total/NA

Client Sample ID: AOC-EMWL9T-0414 — Lab Sample ID: 560-46919-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Methane	1.39		1.00	0.357	ug/L	1		RSK-175	Total/NA
Chloride	20900		1000	192	mg/L	1000		300.0	Total/NA
Sulfate	1850		50.0	18.9	mg/L	50		300.0	Total/NA
Sulfide	0.0140	J	0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	160		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	160		5.00	5.00	mg/L	1		SM 2320B	Total/NA

Client Sample ID: AOC-EMWL39T-0414 — Lab Sample ID: 560-46919-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.508	J	1.00	0.140	ug/L	1		8260B	Total/NA
Methane	0.584	J	1.00	0.357	ug/L	1		RSK-175	Total/NA
Chloride	24100		500	96.0	mg/L	500		300.0	Total/NA
Sulfate	1750		50.0	18.9	mg/L	50		300.0	Total/NA
Sulfide	0.0490	J	0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	166		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	166		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Ferrous Iron	0.105	J HF	0.200	0.0220	mg/L	1		SM 3500 FE D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46919-1

Client Sample ID: AOC-TB05

Lab Sample ID: 560-46919-1
Date Collected: 04/22/14 09:00
Matrix: Water
Date Received: 04/22/14 16:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/24/14 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*04/24/14 18:42*	*1*
Dibromofluoromethane (Surr)	*103*		*69 - 130*		*04/24/14 18:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 140*		*04/24/14 18:42*	*1*
Toluene-d8 (Surr)	*107*		*70 - 130*		*04/24/14 18:42*	*1*

Client Sample ID: AOC-OWLO8-0414

Lab Sample ID: 560-46919-2
Date Collected: 04/22/14 10:15
Matrix: Water
Date Received: 04/22/14 16:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/24/14 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*04/24/14 19:07*	*1*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*		*04/24/14 19:07*	*1*
Dibromofluoromethane (Surr)	*103*		*69 - 130*		*04/24/14 19:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 140*		*04/24/14 19:07*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.917**	**J**	1.00	0.357	ug/L			05/02/14 13:46	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**22300**		500	96.0	mg/L			04/24/14 12:38	500
Nitrate as N	5.15	U	25.0	5.15	mg/L			04/23/14 13:38	50
Nitrite as N	10.0	U	25.0	10.0	mg/L			04/23/14 13:38	50
Sulfate	**2260**		50.0	18.9	mg/L			04/23/14 13:38	50
Sulfide	**0.0160**	**J**	0.0500	0.0131	mg/L			04/28/14 14:00	1
Total Alkalinity as CaCO3	**184**		5.00	5.00	mg/L			05/01/14 14:39	1
Bicarbonate Alkalinity as CaCO3	**184**		5.00	5.00	mg/L			05/01/14 14:39	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1
Ferrous Iron	0.0220	U HF	0.200	0.0220	mg/L			04/24/14 15:30	1

Client Sample ID: AOC-EMWL8T-0414

Lab Sample ID: 560-46919-3
Date Collected: 04/22/14 12:10
Matrix: Water
Date Received: 04/22/14 16:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/24/14 19:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*107*		*70 - 130*		*04/24/14 19:32*	*1*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*		*04/24/14 19:32*	*1*

Client Sample ID: AOC-EMWL8T-0414

Lab Sample ID: 560-46919-3

Date Collected: 04/22/14 12:10

Matrix: Water

Date Received: 04/22/14 16:25

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*04/24/14 19:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*04/24/14 19:32*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**4.26**		1.00	0.357	ug/L			05/02/14 14:00	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**23900**		500	96.0	mg/L			04/24/14 13:00	500
Nitrate as N	5.15	U	25.0	5.15	mg/L			04/23/14 14:00	50
Nitrite as N	10.0	U	25.0	10.0	mg/L			04/23/14 14:00	50
Sulfate	**2070**		50.0	18.9	mg/L			04/23/14 14:00	50
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/28/14 14:00	1
Total Alkalinity as CaCO3	**189**		5.00	5.00	mg/L			05/01/14 14:39	1
Bicarbonate Alkalinity as CaCO3	**189**		5.00	5.00	mg/L			05/01/14 14:39	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1
Ferrous Iron	0.0220	U HF	0.200	0.0220	mg/L			04/24/14 15:30	1

Client Sample ID: AOC-EMWL9T-0414

Lab Sample ID: 560-46919-4

Date Collected: 04/22/14 14:20

Matrix: Water

Date Received: 04/22/14 16:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/24/14 19:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*04/24/14 19:57*	*1*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*04/24/14 19:57*	*1*
Dibromofluoromethane (Surr)	*98*		*69 - 130*		*04/24/14 19:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*04/24/14 19:57*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**1.39**		1.00	0.357	ug/L			05/02/14 14:12	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**20900**		1000	192	mg/L			04/24/14 22:32	1000
Nitrate as N	5.15	U	25.0	5.15	mg/L			04/23/14 14:22	50
Nitrite as N	10.0	U	25.0	10.0	mg/L			04/23/14 14:22	50
Sulfate	**1850**		50.0	18.9	mg/L			04/23/14 14:22	50
Sulfide	**0.0140**	**J**	0.0500	0.0131	mg/L			04/28/14 14:00	1
Total Alkalinity as CaCO3	**160**		5.00	5.00	mg/L			05/01/14 14:39	1
Bicarbonate Alkalinity as CaCO3	**160**		5.00	5.00	mg/L			05/01/14 14:39	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1

Client Sample ID: AOC-EMWL9T-0414

Lab Sample ID: 560-46919-4

Date Collected: 04/22/14 14:20

Matrix: Water

Date Received: 04/22/14 16:25

General Chemistry (Continued)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1
Ferrous Iron	0.0220	U HF	0.200	0.0220	mg/L			04/24/14 15:30	1

Client Sample ID: AOC-EMWL39T-0414

Lab Sample ID: 560-46919-5

Date Collected: 04/22/14 15:35

Matrix: Water

Date Received: 04/22/14 16:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.508**	**J**	1.00	0.140	ug/L			04/24/14 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*70 - 130*		*04/24/14 20:22*	*1*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/24/14 20:22*	*1*
Dibromofluoromethane (Surr)	*98*		*69 - 130*		*04/24/14 20:22*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*04/24/14 20:22*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.584**	**J**	1.00	0.357	ug/L			05/02/14 14:23	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24100**		500	96.0	mg/L			04/24/14 13:44	500
Nitrate as N	5.15	U	25.0	5.15	mg/L			04/23/14 14:44	50
Nitrite as N	10.0	U	25.0	10.0	mg/L			04/23/14 14:44	50
Sulfate	**1750**		50.0	18.9	mg/L			04/23/14 14:44	50
Sulfide	**0.0490**	**J**	0.0500	0.0131	mg/L			04/28/14 14:00	1
Total Alkalinity as CaCO3	**166**		5.00	5.00	mg/L			05/01/14 14:39	1
Bicarbonate Alkalinity as CaCO3	**166**		5.00	5.00	mg/L			05/01/14 14:39	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/01/14 14:39	1
Ferrous Iron	**0.105**	**J HF**	0.200	0.0220	mg/L			04/24/14 15:30	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 560-101210/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101210

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/24/14 12:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*		*04/24/14 12:01*	*1*
Dibromofluoromethane (Surr)	*101*		*69 - 130*		*04/24/14 12:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*04/24/14 12:01*	*1*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/24/14 12:01*	*1*

Lab Sample ID: LCS 560-101210/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101210

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	24.50		ug/L		98	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*
Toluene-d8 (Surr)	*97*		*70 - 130*

Lab Sample ID: 560-46858-B-3 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101210

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	36400		62500	98540		ug/L		99	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*
Toluene-d8 (Surr)	*96*		*70 - 130*

Lab Sample ID: 560-46858-B-3 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101210

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	36400		62500	102000		ug/L		105	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*
Toluene-d8 (Surr)	*107*		*70 - 130*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 600-133532/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133532

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.357	U	1.00	0.357	ug/L			05/02/14 11:22	1

Lab Sample ID: LCS 600-133532/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133532

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	3.44	2.734		ug/L		79	70 - 130

Lab Sample ID: 560-46919-5 MS — **Client Sample ID: AOC-EMWL39T-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133532

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	0.584	J	5.16	4.797		ug/L		82	70 - 130

Lab Sample ID: 560-46919-5 MSD — **Client Sample ID: AOC-EMWL39T-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133532

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	0.584	J	5.16	4.255		ug/L		71	70 - 130	12	30

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 560-101226/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101226

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.192	U	1.00	0.192	mg/L			04/23/14 12:10	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/23/14 12:10	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/23/14 12:10	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/23/14 12:10	1

Lab Sample ID: LCS 560-101226/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101226

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.978		mg/L		100	90 - 110
Nitrate as N	5.00	5.045		mg/L		101	90 - 110
Nitrite as N	5.00	5.065		mg/L		101	90 - 110
Sulfate	20.0	20.19		mg/L		101	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 560-46831-D-1 MS ^100 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101226

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	1680		1000	2763		mg/L		108	80 - 120
Nitrate as N	10.3	U	500	390.0	N1	mg/L		78	80 - 120
Nitrite as N	20.0	U	500	437.0		mg/L		87	80 - 120
Sulfate	37.7	U	2000	1949		mg/L		97	80 - 120

Lab Sample ID: 560-46831-D-1 MSD ^100 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101226

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	1680		1000	2778		mg/L		110	80 - 120	1	20
Nitrate as N	10.3	U	500	455.1		mg/L		91	80 - 120	15	20
Nitrite as N	20.0	U	500	510.6		mg/L		102	80 - 120	16	20
Sulfate	37.7	U	2000	2037		mg/L		102	80 - 120	4	20

Lab Sample ID: MB 560-101272/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.8180	J	1.00	0.192	mg/L			04/24/14 11:10	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/24/14 11:10	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/24/14 11:10	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/24/14 11:10	1

Lab Sample ID: MB 560-101272/31 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.8190	J	1.00	0.192	mg/L			04/24/14 21:26	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/24/14 21:26	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/24/14 21:26	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/24/14 21:26	1

Lab Sample ID: LCS 560-101272/32 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.22		mg/L		102	90 - 110
Nitrate as N	5.00	5.067		mg/L		101	90 - 110
Nitrite as N	5.00	5.093		mg/L		102	90 - 110
Sulfate	20.0	20.47		mg/L		102	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 560-101272/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.886		mg/L		99	90 - 110
Nitrate as N	5.00	4.989		mg/L		100	90 - 110
Nitrite as N	5.00	4.957		mg/L		99	90 - 110
Sulfate	20.0	20.56		mg/L		103	90 - 110

Lab Sample ID: 560-46970-D-4 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	1670	b	1000	2915	N1	mg/L		124	80 - 120
Nitrate as N	52.5		500	342.8	N1	mg/L		58	80 - 120
Nitrite as N	20.0	U	500	497.1		mg/L		99	80 - 120
Sulfate	257		2000	1135	N1	mg/L		44	80 - 120

Lab Sample ID: 560-46970-D-4 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101272

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	1670	b	1000	2872		mg/L		120	80 - 120	2	20
Nitrate as N	52.5		500	360.7	N1	mg/L		62	80 - 120	5	20
Nitrite as N	20.0	U	500	453.1		mg/L		91	80 - 120	9	20
Sulfate	257		2000	1154	N1	mg/L		45	80 - 120	2	20

Method: 376.2 - Sulfide

Lab Sample ID: MB 560-101387/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/28/14 14:00	1

Lab Sample ID: LCS 560-101387/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.501	0.5170		mg/L		103	80 - 120

Lab Sample ID: 560-46973-E-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.0160	J	0.501	0.4880		mg/L		94	75 - 125

Method: 376.2 - Sulfide (Continued)

Lab Sample ID: 560-46973-E-1 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide	0.0160	J	0.501	0.4790		mg/L		92	75 - 125	2	20

Method: SM 2320B - Alkalinity

Lab Sample ID: LCS 560-101538/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	100	99.80		mg/L		100	85 - 115

Lab Sample ID: LCS 560-101538/27 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	100	96.00		mg/L		96	85 - 115

Lab Sample ID: 560-46903-D-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	198		100	292.0		mg/L		94	75 - 125

Lab Sample ID: 560-46903-D-1 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Alkalinity as CaCO3	198		100	293.0		mg/L		95	75 - 125	0	20

Lab Sample ID: 560-46939-J-7 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	753		100	825.2	4	mg/L		72	75 - 125

Lab Sample ID: 560-46939-J-7 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101538

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Alkalinity as CaCO3	753		100	829.4	4	mg/L		76	75 - 125	1	20

QC Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46919-1

Method: SM 3500 FE D - Iron, Ferrous

Lab Sample ID: MB 560-101488/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101488

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Ferrous Iron	0.0220	U	0.200	0.0220	mg/L			04/24/14 15:30	1

Lab Sample ID: LCS 560-101488/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101488

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ferrous Iron			0.800	0.7920		mg/L		99	80 - 120		

Lab Sample ID: 560-46919-5 MS — **Client Sample ID: AOC-EMWL39T-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101488

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ferrous Iron	0.105	J HF	0.800	1.113	N1	mg/L		126	75 - 125		

Lab Sample ID: 560-46919-5 MSD — **Client Sample ID: AOC-EMWL39T-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101488

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ferrous Iron	0.105	J HF	0.800	1.108		mg/L		125	75 - 125	0	20

QC Association Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46919-1

GC/MS VOA

Analysis Batch: 101210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46858-B-3 MS	Matrix Spike	Total/NA	Water	8260B	
560-46858-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
560-46919-1	AOC-TB05	Total/NA	Water	8260B	
560-46919-2	AOC-OWLO8-0414	Total/NA	Water	8260B	
560-46919-3	AOC-EMWL8T-0414	Total/NA	Water	8260B	
560-46919-4	AOC-EMWL9T-0414	Total/NA	Water	8260B	
560-46919-5	AOC-EMWL39T-0414	Total/NA	Water	8260B	
LCS 560-101210/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-101210/8	Method Blank	Total/NA	Water	8260B	

GC VOA

Analysis Batch: 133532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46919-2	AOC-OWLO8-0414	Total/NA	Water	RSK-175	
560-46919-3	AOC-EMWL8T-0414	Total/NA	Water	RSK-175	
560-46919-4	AOC-EMWL9T-0414	Total/NA	Water	RSK-175	
560-46919-5	AOC-EMWL39T-0414	Total/NA	Water	RSK-175	
560-46919-5 MS	AOC-EMWL39T-0414	Total/NA	Water	RSK-175	
560-46919-5 MSD	AOC-EMWL39T-0414	Total/NA	Water	RSK-175	
LCS 600-133532/3	Lab Control Sample	Total/NA	Water	RSK-175	
MB 600-133532/2	Method Blank	Total/NA	Water	RSK-175	

General Chemistry

Analysis Batch: 101226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46831-D-1 MS ^100	Matrix Spike	Total/NA	Water	300.0	
560-46831-D-1 MSD ^100	Matrix Spike Duplicate	Total/NA	Water	300.0	
560-46919-2	AOC-OWLO8-0414	Total/NA	Water	300.0	
560-46919-3	AOC-EMWL8T-0414	Total/NA	Water	300.0	
560-46919-4	AOC-EMWL9T-0414	Total/NA	Water	300.0	
560-46919-5	AOC-EMWL39T-0414	Total/NA	Water	300.0	
LCS 560-101226/4	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101226/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 101272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46919-2	AOC-OWLO8-0414	Total/NA	Water	300.0	
560-46919-3	AOC-EMWL8T-0414	Total/NA	Water	300.0	
560-46919-4	AOC-EMWL9T-0414	Total/NA	Water	300.0	
560-46919-5	AOC-EMWL39T-0414	Total/NA	Water	300.0	
560-46970-D-4 MS	Matrix Spike	Total/NA	Water	300.0	
560-46970-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	
LCS 560-101272/32	Lab Control Sample	Total/NA	Water	300.0	
LCS 560-101272/4	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101272/3	Method Blank	Total/NA	Water	300.0	
MB 560-101272/31	Method Blank	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 101387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46919-2	AOC-OWLO8-0414	Total/NA	Water	376.2	
560-46919-3	AOC-EMWL8T-0414	Total/NA	Water	376.2	
560-46919-4	AOC-EMWL9T-0414	Total/NA	Water	376.2	
560-46919-5	AOC-EMWL39T-0414	Total/NA	Water	376.2	
560-46973-E-1 MS	Matrix Spike	Total/NA	Water	376.2	
560-46973-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	376.2	
LCS 560-101387/4	Lab Control Sample	Total/NA	Water	376.2	
MB 560-101387/3	Method Blank	Total/NA	Water	376.2	

Analysis Batch: 101488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46919-2	AOC-OWLO8-0414	Total/NA	Water	SM 3500 FE D	
560-46919-3	AOC-EMWL8T-0414	Total/NA	Water	SM 3500 FE D	
560-46919-4	AOC-EMWL9T-0414	Total/NA	Water	SM 3500 FE D	
560-46919-5	AOC-EMWL39T-0414	Total/NA	Water	SM 3500 FE D	
560-46919-5 MS	AOC-EMWL39T-0414	Total/NA	Water	SM 3500 FE D	
560-46919-5 MSD	AOC-EMWL39T-0414	Total/NA	Water	SM 3500 FE D	
LCS 560-101488/4	Lab Control Sample	Total/NA	Water	SM 3500 FE D	
MB 560-101488/3	Method Blank	Total/NA	Water	SM 3500 FE D	

Analysis Batch: 101538

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46903-D-1 MS	Matrix Spike	Total/NA	Water	SM 2320B	
560-46903-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 2320B	
560-46919-2	AOC-OWLO8-0414	Total/NA	Water	SM 2320B	
560-46919-3	AOC-EMWL8T-0414	Total/NA	Water	SM 2320B	
560-46919-4	AOC-EMWL9T-0414	Total/NA	Water	SM 2320B	
560-46919-5	AOC-EMWL39T-0414	Total/NA	Water	SM 2320B	
560-46939-J-7 MS	Matrix Spike	Total/NA	Water	SM 2320B	
560-46939-J-7 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 2320B	
LCS 560-101538/14	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 560-101538/27	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46919-1

Client Sample ID: AOC-TB05 — Lab Sample ID: 560-46919-1

Date Collected: 04/22/14 09:00 — **Matrix: Water**
Date Received: 04/22/14 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101210	04/24/14 18:42	RJT	TAL CC

Client Sample ID: AOC-OWLO8-0414 — Lab Sample ID: 560-46919-2

Date Collected: 04/22/14 10:15 — **Matrix: Water**
Date Received: 04/22/14 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101210	04/24/14 19:07	RJT	TAL CC
Total/NA	Analysis	RSK-175		1	133532	05/02/14 13:46	JPS	TAL HOU
Total/NA	Analysis	300.0		50	101226	04/23/14 13:38	HMZ	TAL CC
Total/NA	Analysis	300.0		500	101272	04/24/14 12:38	JEM	TAL CC
Total/NA	Analysis	376.2		1	101387	04/28/14 14:00	LPO	TAL CC
Total/NA	Analysis	SM 2320B		1	101538	05/01/14 14:39	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101488	04/24/14 15:30	LPO	TAL CC

Client Sample ID: AOC-EMWL8T-0414 — Lab Sample ID: 560-46919-3

Date Collected: 04/22/14 12:10 — **Matrix: Water**
Date Received: 04/22/14 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101210	04/24/14 19:32	RJT	TAL CC
Total/NA	Analysis	RSK-175		1	133532	05/02/14 14:00	JPS	TAL HOU
Total/NA	Analysis	300.0		50	101226	04/23/14 14:00	HMZ	TAL CC
Total/NA	Analysis	300.0		500	101272	04/24/14 13:00	JEM	TAL CC
Total/NA	Analysis	376.2		1	101387	04/28/14 14:00	LPO	TAL CC
Total/NA	Analysis	SM 2320B		1	101538	05/01/14 14:39	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101488	04/24/14 15:30	LPO	TAL CC

Client Sample ID: AOC-EMWL9T-0414 — Lab Sample ID: 560-46919-4

Date Collected: 04/22/14 14:20 — **Matrix: Water**
Date Received: 04/22/14 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101210	04/24/14 19:57	RJT	TAL CC
Total/NA	Analysis	RSK-175		1	133532	05/02/14 14:12	JPS	TAL HOU
Total/NA	Analysis	300.0		50	101226	04/23/14 14:22	HMZ	TAL CC
Total/NA	Analysis	300.0		1000	101272	04/24/14 22:32	JEM	TAL CC
Total/NA	Analysis	376.2		1	101387	04/28/14 14:00	LPO	TAL CC
Total/NA	Analysis	SM 2320B		1	101538	05/01/14 14:39	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101488	04/24/14 15:30	LPO	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46919-1

Client Sample ID: AOC-EMWL39T-0414

Lab Sample ID: 560-46919-5

Date Collected: 04/22/14 15:35

Matrix: Water

Date Received: 04/22/14 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101210	04/24/14 20:22	RJT	TAL CC
Total/NA	Analysis	RSK-175		1	133532	05/02/14 14:23	JPS	TAL HOU
Total/NA	Analysis	300.0		50	101226	04/23/14 14:44	HMZ	TAL CC
Total/NA	Analysis	300.0		500	101272	04/24/14 13:44	JEM	TAL CC
Total/NA	Analysis	376.2		1	101387	04/28/14 14:00	LPO	TAL CC
Total/NA	Analysis	SM 2320B		1	101538	05/01/14 14:39	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101488	04/24/14 15:30	LPO	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Certification Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46919-1

Laboratory: TestAmerica Corpus Christi

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Bicarbonate Alkalinity as CaCO3
SM 2320B		Water	Carbonate Alkalinity as CaCO3
SM 2320B		Water	Hydroxide Alkalinity
SM 2320B		Water	Phenolphthalein Alkalinity
SM 2320B		Water	Total Alkalinity as CaCO3
SM 3500 FE D		Water	Ferrous Iron

Laboratory: TestAmerica Houston

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704223	10-31-14

Method Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46919-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC
RSK-175	Dissolved Gases (GC)	RSK	TAL HOU
300.0	Anions, Ion Chromatography	MCAWW	TAL CC
376.2	Sulfide	MCAWW	TAL CC
SM 2320B	Alkalinity	SM	TAL CC
SM 3500 FE D	Iron, Ferrous	SM	TAL CC

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46919-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-46919-1	AOC-TB05	Water	04/22/14 09:00	04/22/14 16:25
560-46919-2	AOC-OWLO8-0414	Water	04/22/14 10:15	04/22/14 16:25
560-46919-3	AOC-EMWL8T-0414	Water	04/22/14 12:10	04/22/14 16:25
560-46919-4	AOC-EMWL9T-0414	Water	04/22/14 14:20	04/22/14 16:25
560-46919-5	AOC-EMWL39T-0414	Water	04/22/14 15:35	04/22/14 16:25

...merica Corpus Christi
... N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAmerica
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Loc: 560
46919

Client Information	Sampler: Liz Rinehart / John Sorkness	Lab PM: Salcher, Neal	Carrier Tracking No(s):	COC No: 560-13299-862.6
Client Contact: David Zuvanich	Phone: 210-219-1561	E-Mail: neal.salcher@testamericainc.com		Page: Page 1 of 1
Company: El Paso Energy Corporation				Job #:
Address: 1001 Louisiana Street Room S1905B	Due Date Requested:			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: WD# 208570			
Project Name: Elementis AOC Groundwater	Project #: 56000079			
Site:	SSOW#:			

Preservation Codes.

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)

Other:

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - Benzene	SM4500 S2D - sulfide	E300.0 - SO4, NO3, NO2	SM3500 - Ferrous Fe, Alk	RSK175 - Methane	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	5C	N	N	A		
AOC-TB05	4/22/14	0900	G	Water	N	N	X					2	
AOC-OWL08-0414	↓	1015	↓	Water	↓	↓	X	X	X	X	X	8	
AOC-EMWL8T-0414	↓	1210	↓	Water	↓	↓	X	X	X	X	X	8	
AOC-EMWL9T-0414	↓	1420	↓	Water	↓	↓	X	X	X	X	X	8	
AOC-EMWL39T-0414	↓	1535	↓	Water	↓	↓	X	X	X	X	X	8	
				Water									
				Water									
				Water									
				Water									
				Water									
				Water									

560-46919 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	4-22-14/1550	URS	[signature]	4/22/14 1550	URS
[signature]	4/22/14 1625	Company	[signature]	4/22/14 16:25	TACC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 06 2.2 & 6 2.4 & IR4

5/19/2014

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-46919-1

Login Number: 46919

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-46919-1

Login Number: 46919
List Number: 2
Creator: Culik, Marie E

List Source: TestAmerica Houston
List Creation: 04/24/14 11:21 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46919-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.140	ug/L	8260B

Method: RSK-175 - Dissolved Gases (GC)

Analyte	MQL	MDL	Units	Method
Methane	1.00	0.357	ug/L	RSK-175

General Chemistry

Analyte	MQL	MDL	Units	Method
Chloride	1.00	0.192	mg/L	300.0
Nitrate as N	0.500	0.103	mg/L	300.0
Nitrite as N	0.500	0.200	mg/L	300.0
Sulfate	1.00	0.377	mg/L	300.0
Sulfide	0.0500	0.0131	mg/L	376.2
Bicarbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Carbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Hydroxide Alkalinity	5.00	5.00	mg/L	SM 2320B
Phenolphthalein Alkalinity	5.00	5.00	mg/L	SM 2320B
Total Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Ferrous Iron	0.200	0.0220	mg/L	SM 3500 FE D

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-46919-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Sophia Shah		5/19/2014
Name (printed)	Signature	Date

Project Management Assistant
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/19/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46919-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?		X			R03A
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			R07C
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		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" must be included in the laboratory data package submitted 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 Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/19/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46919-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?	X				
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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 Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/19/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46919-1
Reviewer Name:	Neal Salcher		

ER #[1]	Description
R03A	Method SM 3500 FE D: The following samples were received outside of holding time: 560-46919-2, 560-46919-3, 560-46919-4, 560-46919-5. Method: 3500 Fe DBatch: 101488
R07C	Method 300.0: 560-46970-D-4 MS failed the recovery criteria for the following analyte(s): Chloride, Nitrate as N, Sulfate. Matrix interference is suspected. Method 300.0: 560-46970-D-4 MSD failed the recovery criteria for the following analyte(s): Nitrate as N, Sulfate. Matrix interference is suspected. Method 300.0: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch <<101226>> were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. Method SM 2320B: 560-46939-J-7 MS failed the recovery criteria for the following analyte(s): Bicarbonate Alkalinity as CaCO3, Total Alkalinity as CaCO3. Matrix interference is suspected. Method SM 3500 FE D: The matrix spike (MS) recoveries for batch 101488 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.Method: 3500 Fe D

1. Items identified by the letter “R” must be included in the laboratory data package submitted 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).

TestAmerica
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TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	12/30/2013 - 4Q13
METHOD NUMBER:	8260B
METHOD DESCRIPTION:	GC/MS
PREP METHOD:	5030B
INSTRUMENT:	VGCMS # 1

ANALYTE	CURRENT MDL (ug/L)	SPIKE RANGE MINIMUM (ug/L)	SPIKE RANGE MAXIMUM (ug/L)	SPIKE (ug/L)	MEAS VALUE (ug/L)	ANALYTE IS DETECTED
1,1,1,2-Tetrachloroethane	0.209	0.209	0.627	0.5	0.415	yes
1,1,1-Trichloroethane	0.3	0.3	0.9	0.5	0.411	yes
1,1,2,2-Tetrachloroethane	0.19	0.19	0.57	0.5	0.361	yes
1,1,2-Trichloro-1,2,2-trifluoroethane	0.278	0.278	0.834	0.5	0.418	yes
1,1,2-Trichloroethane	0.173	0.173	0.519	0.5	0.451	yes
1,1-Dichloroethane	0.168	0.168	0.504	0.5	0.503	yes
1,1-Dichloroethene	0.3	0.3	0.9	0.5	0.514	yes
1,1-Dichloropropene	0.185	0.185	0.555	0.5	0.582	yes
1,2,3-Trichlorobenzene	0.217	0.217	0.651	0.5	0.425	yes
1,2,3-Trichloropropane	0.191	0.191	0.573	0.5	0.293	yes
1,2,4-Trichlorobenzene	0.168	0.168	0.504	0.5	0.435	yes
1,2,4-Trimethylbenzene	0.2	0.2	0.6	0.5	0.361	yes
1,2-Dibromo-3-Chloropropane	0.349	0.349	1.047	1	0.597	yes
1,2-Dibromoethane	0.15	0.15	0.45	0.3	0.165	yes
1,2-Dichlorobenzene	0.117	0.117	0.351	0.3	0.317	yes
1,2-Dichloroethane	0.16	0.16	0.48	0.5	0.47	yes
1,2-Dichloropropane	0.173	0.173	0.519	0.5	0.442	yes
1,3,5-Trichlorobenzene	0.203	0.203	0.609	0.3	0.322	yes
1,3,5-Trimethylbenzene	0.2	0.2	0.6	0.3	0.227	yes
1,3-Dichlorobenzene	0.128	0.128	0.384	0.3	0.291	yes
1,3-Dichloropropane	0.146	0.146	0.438	0.3	0.204	yes
1,4-Dichlorobenzene	0.2	0.2	0.6	0.3	0.341	yes
1,4-Dioxane	7.46	7.46	22.38	20	9.06	yes
1-Chlorohexane	0.5	0.5	1.5	1	2.31	yes
1-Octene	0.44	0.44	1.32	1	0.447	yes
2,2-Dichloropropane	0.335	0.335	1.005	1	1.07	yes
2-Chloro-1,3-butadiene	0.2	0.2	0.6	0.5	0.46	yes
2-Chloroethyl vinyl ether	0.191	0.191	0.573	1	1.27	yes
2-Chlorotoluene	0.155	0.155	0.465	0.3	0.244	yes
2-Hexanone	0.2	0.2	0.6	1	0.564	yes
2-Nitropropane	0.225	0.225	0.675	1	4.17	yes
4-Chlorotoluene	0.242	0.242	0.726	0.5	0.41	yes
4-Isopropyltoluene	0.15	0.15	0.45	0.3	0.241	yes
4-Methyl-2-pentanone (MIBK)	0.116	0.116	0.348	0.3	0.124	yes
Acetone	5	5	15	5	5.94	yes
Acetonitrile	10	10	30	20	19.7	yes
Acrolein	5	5	15	10	14.4	yes
Acrylonitrile	1.93	1.93	5.79	5	7.56	yes
Allyl chloride	0.421	0.421	1.263	0.5	0.5	yes
Benzene	0.14	0.14	0.42	0.3	0.353	yes
Benzyl chloride	0.278	0.278	0.834	0.5	3.05	yes
Bromobenzene	0.128	0.128	0.384	0.3	0.25	yes
Bromodichloromethane	0.175	0.175	0.525	0.3	0.246	yes
Bromoform	0.5	0.5	1.5	1	0.673	yes
Bromomethane	0.392	0.392	1.176	0.5	0.548	yes
Butadiene	0.3	0.3	0.9	0.5	0.782	yes
Carbon disulfide	0.5	0.5	1.5	0.5	0.606	yes
Carbon tetrachloride	0.251	0.251	0.753	0.5	0.487	yes
Chlorobenzene	0.136	0.136	0.408	0.3	0.299	yes
Chlorobromomethane	0.228	0.228	0.684	0.5	0.398	yes
Chlorodibromomethane	0.223	0.223	0.669	0.5	0.737	yes
Chloroethane	0.4	0.4	1.2	0.5	0.545	yes
Chloroform	0.173	0.173	0.519	0.3	0.293	yes
Chloromethane	0.39	0.39	1.17	0.5	0.686	yes
cis-1,2-Dichloroethene	0.121	0.121	0.363	0.3	0.276	yes
cis-1,3-Dichloropropene	0.146	0.146	0.438	0.3	0.588	yes
cis-1,4-Dichloro-2-butene	0.5	0.5	1.5	0.5	9.63	yes

Cyclohexane	1	1	3	2	1.71	yes
Cyclohexanone	5	5	15	10	6.21	yes
Dibromomethane	0.165	0.165	0.495	0.5	0.499	yes
Dichlorodifluoromethane	0.429	0.429	1.287	1	1.08	yes
Ethyl acetate	1	1	3	1	3	yes
Ethyl ether	0.135	0.135	0.405	0.5	0.356	yes
Ethyl methacrylate	0.5	0.5	1.5	1	0.769	yes
Ethylbenzene	0.2	0.2	0.6	0.3	0.26	yes
Ethylene Oxide	9.2	9.2	27.6	20	13.1	yes
Hexachlorobutadiene	0.86	0.86	2.58	1	0.973	yes
Hexane	2	2	6	5	4.13	yes
Iodomethane	0.223	0.223	0.669	0.3	0.303	yes
Isobutyl alcohol	3.39	3.39	10.17	40	41.7	yes
Isooctane	0.5	0.5	1.5	1	0.799	yes
Isopropylbenzene	0.2	0.2	0.6	0.3	0.246	yes
m-Xylene & p-Xylene	0.26	0.26	0.78	2	1.94	yes
Methacrylonitrile	1.55	1.55	4.65	10	9.93	yes
Methyl ethyl ketone (MEK)	1	1	3	1	2.03	yes
Methyl methacrylate	0.196	0.196	0.588	1	0.827	yes
Methyl tert-butyl ether	0.2	0.2	0.6	0.3	0.319	yes
Methylene Chloride	2	2	6	2	2.29	yes
n-Butylbenzene	0.2	0.2	0.6	0.3	0.265	yes
n-Heptane	0.3	0.3	0.9	0.5	0.376	yes
N-Propylbenzene	0.106	0.106	0.318	0.3	0.247	yes
Naphthalene	0.2	0.2	0.6	0.5	0.296	yes
o-Xylene	0.2	0.2	0.6	0.3	0.26	yes
Pentachloroethane	0.302	0.302	0.906	1	0.772	yes
Propionitrile	2.69	2.69	8.07	10	10.3	yes
sec-Butylbenzene	0.3	0.3	0.9	0.5	0.373	yes
Styrene	0.2	0.2	0.6	0.5	0.668	yes
tert-Butylbenzene	0.2	0.2	0.6	0.3	0.233	yes
Tetrachloroethene	0.189	0.189	0.567	0.3	0.289	yes
Toluene	0.3	0.3	0.9	0.3	0.352	yes
trans-1,2-Dichloroethene	0.2	0.2	0.6	0.5	0.436	yes
trans-1,3-Dichloropropene	0.2	0.2	0.6	0.3	0.65	yes
trans-1,4-Dichloro-2-butene	0.5	0.5	1.5	1	0.598	yes
Trichloroethene	0.317	0.317	0.951	0.5	0.48	yes
Trichlorofluoromethane	0.244	0.244	0.732	0.5	0.494	yes
Vinyl acetate	0.3	0.3	0.9	1	2.72	yes
Vinyl chloride	0.3	0.3	0.9	0.5	0.58	yes
Xylenes, Total	0.226	0.226	0.678	0.9	0.798	yes

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TestAmerica - Corpus Christi

TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	1Q13
LAB:	organic Chemistry (Wet Lab
JOB #:	560-33719-1

ANALYTE	CURRENT MDL (mg/L)	SPIKE RANGE MINIMUM (mg/L)	SPIKE RANGE MAXIMUM (mg/L)	SPIKE (mg/L)	MEAS VALUE (mg/L)	ANALYTE IS DETECTED
Alkalinity, Titration Method 2320B	1.29	1.29	3.87	3	0.6	yes
Ammonia (as Nitrogen) Method 350.1 by SEAL AQ2	0.045	0.045	0.135	0.1	0.27	yes
Chemical Oxygen Demand (COD) Colorimetric by HACH8000	3.11	3.11	9.33	10	17.5	yes
HEM (Oil & Grease) 1664A_NP	0.78	0.78	2.34	1.96	1.5	yes
Total Organic Carbon (TOC) by SM5310B	0.285	0.285	0.855	0.5	0.693	yes
EPA 300 Anions, Ion Chromotography						
Bromide	0.315	0.315	0.945	0.5	0.829	yes
Chloride	0.192	0.192	0.576	0.5	0.567	yes
Nitrate as N	0.103	0.103	0.309	0.2	0.45	yes
Nitrate Nitrite as N	0.2	0.2	0.6	0.4	0.785	yes
Nitrite as N	0.2	0.2	0.6	0.2	0.335	yes
Sulfate	0.377	0.377	1.131	1	1.68	yes
Chloride by 325.2	5	5	15	5	5	yes
Cyanide, Total 335.4	0.0082	0.0082	0.0246	0.02	0.0339	yes
Orthophosphate as P by 365.3	0.0141	0.0141	0.0423	0.03	0.031	yes
Sulfide by 376.2	0.0131	0.0131	0.0393	0.0301	0.019	yes
Ferrous Iron by SM3500 FeD	0.022	0.022	0.066	0.05	0.043	yes
Chlorine, Total Residual	0.0766	0.0766	0.2298	0.1	0.15	yes
Fluoride (Ion -selective electrode) by SM4500 F C	0.02	0.02	0.06	0.05	0.0624	yes
Nitrite as N by SM4500 NO2 B	0.002	0.002	0.006	0.005	0.005	yes
Sulfite by SM4500 SO3 B	2	2	6	2	2	yes
MBAS by SM5540C	0.036	0.036	0.108	0.05	0.054	yes

Matrix: Water
Method: RSK_175
Prep Method: Pass
Date Analyzed: 3/4/2014
Job #: 600-87854
TALS Batch: 128709
Units: ug/L

Analyte	Instrument #	MDL	DCS Spike	Measured Result	MQL
Ethane	FID14	0.303	0.388	0.366	2
Ethylene	FID14	0.324	0.362	0.296	2
Methane	FID14	0.357	0.2064	0.280	2
Propane	FID14	0.746	0.5672	0.435	2
Propene	FID14	0.659	0.5432	0.513	2

DCS = Detection Check Standard
MQL = Method Quantitation Limit

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-46973-1
Client Project/Site: Elementis AOC Groundwater
Revision: 2

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
6/10/2014 9:48:42 AM
Sophia Shah, Project Management Assistant I
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LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.

GC VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

Metals

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

General Chemistry

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 560-46973-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-46973-1

Comments
This report was revised on 6/10/2014 to correct the TRRP LRC.

Receipt
The samples were received on 4/23/2014 4:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 4.0º C.

Hexavalent Chrome requested for sample AOC-PZ06-041 was not analyzed due to Lab oversight.

Detection Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Client Sample ID: AOC-EMWL35B-0414 — Lab Sample ID: 560-46973-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	9.32		1.00	0.140	ug/L	1		8260B	Total/NA
Methane	445		75.0	26.8	ug/L	75		RSK-175	Total/NA
Chloride	9000		500	96.0	mg/L	500		300.0	Total/NA
Sulfate	1500		500	189	mg/L	500		300.0	Total/NA
Sulfide	0.0160	J	0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	688		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	688		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Ferrous Iron	2.25	HF	0.800	0.0880	mg/L	4		SM 3500 FE D	Total/NA

Client Sample ID: AOC-TB02 — Lab Sample ID: 560-46973-2

No Detections.

Client Sample ID: AOC-EMWL34T-0414 — Lab Sample ID: 560-46973-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	364000		5000	700	ug/L	5000		8260B	Total/NA
Methane	1770		100	35.7	ug/L	100		RSK-175	Total/NA
Chloride	7720		1000	192	mg/L	1000		300.0	Total/NA
Sulfate	3050		1000	377	mg/L	1000		300.0	Total/NA
Sulfide	0.103		0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	760		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	760		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Ferrous Iron	0.337	HF	0.200	0.0220	mg/L	1		SM 3500 FE D	Total/NA

Client Sample ID: AOC-EMWL36T-0414 — Lab Sample ID: 560-46973-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	860000		10000	1400	ug/L	10000		8260B	Total/NA
Methane	2770		100	35.7	ug/L	100		RSK-175	Total/NA
Chloride	5480		1000	192	mg/L	1000		300.0	Total/NA
Sulfate	2180		1000	377	mg/L	1000		300.0	Total/NA
Sulfide	0.0300	J	0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	855		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	855		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Ferrous Iron	0.0830	J HF	0.200	0.0220	mg/L	1		SM 3500 FE D	Total/NA

Client Sample ID: AOC-EMWL36T-0414-1 — Lab Sample ID: 560-46973-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	896000		10000	1400	ug/L	10000		8260B	Total/NA

Client Sample ID: AOC-OWL14R-0414 — Lab Sample ID: 560-46973-6

No Detections.

Client Sample ID: AOC-LPZ40-0414 — Lab Sample ID: 560-46973-7

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Client Sample ID: AOC-EMWU42T-0414 — Lab Sample ID: 560-46973-8

No Detections.

Client Sample ID: AOC-MWU38-0414 — Lab Sample ID: 560-46973-9

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	22.9		5.00	0.700	ug/L	5		8260B	Total/NA

Client Sample ID: AOC-MWU37-0414-3 — Lab Sample ID: 560-46973-10

No Detections.

Client Sample ID: AOC-LPZ41-0414 — Lab Sample ID: 560-46973-11

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.718	J	1.00	0.140	ug/L	1		8260B	Total/NA

Client Sample ID: AOC-LPZ41-0414-1 — Lab Sample ID: 560-46973-12

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.668	J	1.00	0.140	ug/L	1		8260B	Total/NA

Client Sample ID: AOC-MWU36-0414 — Lab Sample ID: 560-46973-13

No Detections.

Client Sample ID: AOC-PZ06-0414 — Lab Sample ID: 560-46973-14

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	124000		2000	280	ug/L	2000		8260B	Total/NA
Chromium	12.3		0.00500	0.00140	mg/L	1		6020	Dissolved

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Client Sample ID: AOC-EMWL35B-0414

Lab Sample ID: 560-46973-1
Date Collected: 04/22/14 16:50
Matrix: Water
Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**9.32**		1.00	0.140	ug/L			04/27/14 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*107*		*70 - 130*		*04/27/14 17:06*	*1*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*04/27/14 17:06*	*1*
Dibromofluoromethane (Surr)	*98*		*69 - 130*		*04/27/14 17:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*04/27/14 17:06*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**445**		75.0	26.8	ug/L			05/06/14 09:39	75

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**9000**		500	96.0	mg/L			04/25/14 12:33	500
Nitrate as N	51.5	U	250	51.5	mg/L			04/25/14 12:33	500
Nitrite as N	100	U	250	100	mg/L			04/25/14 12:33	500
Sulfate	**1500**		500	189	mg/L			04/25/14 12:33	500
Sulfide	**0.0160**	**J**	0.0500	0.0131	mg/L			04/28/14 14:00	1
Total Alkalinity as CaCO3	**688**		5.00	5.00	mg/L			05/02/14 09:20	1
Bicarbonate Alkalinity as CaCO3	**688**		5.00	5.00	mg/L			05/02/14 09:20	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/02/14 09:20	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/02/14 09:20	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/02/14 09:20	1
Ferrous Iron	**2.25**	**HF**	0.800	0.0880	mg/L			04/25/14 15:15	4

Client Sample ID: AOC-TB02

Lab Sample ID: 560-46973-2
Date Collected: 04/22/14 16:30
Matrix: Water
Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/27/14 17:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*		*04/27/14 17:31*	*1*
Dibromofluoromethane (Surr)	*92*		*69 - 130*		*04/27/14 17:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 140*		*04/27/14 17:31*	*1*
Toluene-d8 (Surr)	*96*		*70 - 130*		*04/27/14 17:31*	*1*

Client Sample ID: AOC-EMWL34T-0414

Lab Sample ID: 560-46973-3
Date Collected: 04/22/14 17:50
Matrix: Water
Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**364000**		5000	700	ug/L			04/27/14 17:56	5000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*04/27/14 17:56*	*5000*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*		*04/27/14 17:56*	*5000*

Client Sample ID: AOC-EMWL34T-0414

Lab Sample ID: 560-46973-3

Date Collected: 04/22/14 17:50

Matrix: Water

Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*92*		*69 - 130*		*04/27/14 17:56*	*5000*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 140*		*04/27/14 17:56*	*5000*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**1770**		100	35.7	ug/L			05/06/14 10:04	100

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**7720**		1000	192	mg/L			04/25/14 14:01	1000
Nitrate as N	103	U	500	103	mg/L			04/25/14 14:01	1000
Nitrite as N	200	U	500	200	mg/L			04/25/14 14:01	1000
Sulfate	**3050**		1000	377	mg/L			04/25/14 14:01	1000
Sulfide	**0.103**		0.0500	0.0131	mg/L			04/28/14 14:00	1
Total Alkalinity as CaCO3	**760**		5.00	5.00	mg/L			05/02/14 09:20	1
Bicarbonate Alkalinity as CaCO3	**760**		5.00	5.00	mg/L			05/02/14 09:20	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/02/14 09:20	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/02/14 09:20	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/02/14 09:20	1
Ferrous Iron	**0.337**	**HF**	0.200	0.0220	mg/L			04/25/14 15:15	1

Client Sample ID: AOC-EMWL36T-0414

Lab Sample ID: 560-46973-4

Date Collected: 04/22/14 19:25

Matrix: Water

Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**860000**		10000	1400	ug/L			04/27/14 18:21	10000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*04/27/14 18:21*	*10000*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*		*04/27/14 18:21*	*10000*
Dibromofluoromethane (Surr)	*98*		*69 - 130*		*04/27/14 18:21*	*10000*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*04/27/14 18:21*	*10000*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**2770**		100	35.7	ug/L			05/06/14 10:30	100

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5480**		1000	192	mg/L			04/25/14 14:23	1000
Nitrate as N	103	U	500	103	mg/L			04/25/14 14:23	1000
Nitrite as N	200	U	500	200	mg/L			04/25/14 14:23	1000
Sulfate	**2180**		1000	377	mg/L			04/25/14 14:23	1000
Sulfide	**0.0300**	**J**	0.0500	0.0131	mg/L			04/28/14 14:00	1
Total Alkalinity as CaCO3	**855**		5.00	5.00	mg/L			05/02/14 09:20	1
Bicarbonate Alkalinity as CaCO3	**855**		5.00	5.00	mg/L			05/02/14 09:20	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/02/14 09:20	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/02/14 09:20	1

Client Sample ID: AOC-EMWL36T-0414 — Lab Sample ID: 560-46973-4

Date Collected: 04/22/14 19:25 — **Matrix: Water**
Date Received: 04/23/14 16:45

General Chemistry (Continued)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/02/14 09:20	1
Ferrous Iron	**0.0830**	**J HF**	0.200	0.0220	mg/L			04/25/14 15:15	1

Client Sample ID: AOC-EMWL36T-0414-1 — Lab Sample ID: 560-46973-5

Date Collected: 04/22/14 19:25 — **Matrix: Water**
Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**896000**		10000	1400	ug/L			04/27/14 18:46	10000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*70 - 130*		*04/27/14 18:46*	*10000*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*		*04/27/14 18:46*	*10000*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*04/27/14 18:46*	*10000*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*04/27/14 18:46*	*10000*

Client Sample ID: AOC-OWL14R-0414 — Lab Sample ID: 560-46973-6

Date Collected: 04/23/14 08:25 — **Matrix: Water**
Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/27/14 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/27/14 19:11*	*1*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*04/27/14 19:11*	*1*
Dibromofluoromethane (Surr)	*101*		*69 - 130*		*04/27/14 19:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*		*04/27/14 19:11*	*1*

Client Sample ID: AOC-LPZ40-0414 — Lab Sample ID: 560-46973-7

Date Collected: 04/23/14 09:15 — **Matrix: Water**
Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.700	U	5.00	0.700	ug/L			04/27/14 19:36	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*70 - 130*		*04/27/14 19:36*	*5*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*04/27/14 19:36*	*5*
Dibromofluoromethane (Surr)	*98*		*69 - 130*		*04/27/14 19:36*	*5*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*		*04/27/14 19:36*	*5*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Client Sample ID: AOC-EMWU42T-0414

Lab Sample ID: 560-46973-8
Date Collected: 04/23/14 09:55
Matrix: Water
Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.700	U	5.00	0.700	ug/L			04/27/14 20:01	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*04/27/14 20:01*	*5*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*		*04/27/14 20:01*	*5*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*04/27/14 20:01*	*5*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*		*04/27/14 20:01*	*5*

Client Sample ID: AOC-MWU38-0414

Lab Sample ID: 560-46973-9
Date Collected: 04/23/14 10:35
Matrix: Water
Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**22.9**		5.00	0.700	ug/L			04/27/14 20:26	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/27/14 20:26*	*5*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/27/14 20:26*	*5*
Dibromofluoromethane (Surr)	*97*		*69 - 130*		*04/27/14 20:26*	*5*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*04/27/14 20:26*	*5*

Client Sample ID: AOC-MWU37-0414-3

Lab Sample ID: 560-46973-10
Date Collected: 04/23/14 11:20
Matrix: Water
Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/28/14 11:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*106*		*70 - 130*		*04/28/14 11:45*	*1*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*04/28/14 11:45*	*1*
Dibromofluoromethane (Surr)	*98*		*69 - 130*		*04/28/14 11:45*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*04/28/14 11:45*	*1*

Client Sample ID: AOC-LPZ41-0414

Lab Sample ID: 560-46973-11
Date Collected: 04/23/14 12:53
Matrix: Water
Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.718**	**J**	1.00	0.140	ug/L			04/27/14 20:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*04/27/14 20:51*	*1*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*		*04/27/14 20:51*	*1*
Dibromofluoromethane (Surr)	*105*		*69 - 130*		*04/27/14 20:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 140*		*04/27/14 20:51*	*1*

Client Sample ID: AOC-LPZ41-0414-1

Lab Sample ID: 560-46973-12

Date Collected: 04/23/14 12:50

Matrix: Water

Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.668	J	1.00	0.140	ug/L			04/27/14 21:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*108*		*70 - 130*		*04/27/14 21:16*	*1*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*		*04/27/14 21:16*	*1*
Dibromofluoromethane (Surr)	*93*		*69 - 130*		*04/27/14 21:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*04/27/14 21:16*	*1*

Client Sample ID: AOC-MWU36-0414

Lab Sample ID: 560-46973-13

Date Collected: 04/23/14 14:05

Matrix: Water

Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	14.0	U	100	14.0	ug/L			04/27/14 21:40	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*04/27/14 21:40*	*100*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*		*04/27/14 21:40*	*100*
Dibromofluoromethane (Surr)	*93*		*69 - 130*		*04/27/14 21:40*	*100*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*04/27/14 21:40*	*100*

Client Sample ID: AOC-PZ06-0414

Lab Sample ID: 560-46973-14

Date Collected: 04/23/14 16:25

Matrix: Water

Date Received: 04/23/14 16:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	124000		2000	280	ug/L			04/27/14 22:06	2000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*04/27/14 22:06*	*2000*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*04/27/14 22:06*	*2000*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*04/27/14 22:06*	*2000*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 140*		*04/27/14 22:06*	*2000*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	12.3		0.00500	0.00140	mg/L		04/25/14 11:00	04/29/14 11:52	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 560-101328/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101328

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/27/14 15:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*		*04/27/14 15:25*	*1*
Dibromofluoromethane (Surr)	*92*		*69 - 130*		*04/27/14 15:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*04/27/14 15:25*	*1*
Toluene-d8 (Surr)	*94*		*70 - 130*		*04/27/14 15:25*	*1*

Lab Sample ID: LCS 560-101328/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101328

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	25.50		ug/L		102	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*
Toluene-d8 (Surr)	*97*		*70 - 130*

Lab Sample ID: 560-46970-A-5 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101328

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	1360000		750000	1998000		ug/L		85	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
Dibromofluoromethane (Surr)	*97*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 140*
Toluene-d8 (Surr)	*101*		*70 - 130*

Lab Sample ID: 560-46970-A-5 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101328

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	1360000		750000	2082000		ug/L		97	70 - 130	4	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*96*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 140*
Toluene-d8 (Surr)	*99*		*70 - 130*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 560-101337/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101337

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/28/14 11:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*		*04/28/14 11:20*	*1*
Dibromofluoromethane (Surr)	*93*		*69 - 130*		*04/28/14 11:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 140*		*04/28/14 11:20*	*1*
Toluene-d8 (Surr)	*96*		*70 - 130*		*04/28/14 11:20*	*1*

Lab Sample ID: LCS 560-101337/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101337

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	25.74		ug/L		103	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*98*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*
Toluene-d8 (Surr)	*101*		*70 - 130*

Lab Sample ID: 560-46973-10 MS — **Client Sample ID: AOC-MWU37-0414-3**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101337

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.140	U	25.0	27.08		ug/L		108	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*70 - 130*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
Dibromofluoromethane (Surr)	*98*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 140*

Lab Sample ID: 560-46973-10 MSD — **Client Sample ID: AOC-MWU37-0414-3**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101337

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.140	U	25.0	27.38		ug/L		110	70 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*70 - 130*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*95*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 140*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 600-133678/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.357	U	1.00	0.357	ug/L			05/05/14 10:47	1

Lab Sample ID: LCS 600-133678/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	5.16	4.662		ug/L		90	70 - 130

Lab Sample ID: 560-46970-A-2 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	0.908	J	5.16	5.689		ug/L		93	70 - 130

Lab Sample ID: 560-46970-A-2 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	0.908	J	5.16	5.533		ug/L		90	70 - 130	3	30

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 560-101280/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101415 — **Prep Batch: 101280**

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.00140	U	0.00500	0.00140	mg/L		04/25/14 11:00	04/28/14 15:37	1

Lab Sample ID: LCS 560-101280/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101415 — **Prep Batch: 101280**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	0.500	0.4041		mg/L		81	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 560-101319/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101319

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.192	U	1.00	0.192	mg/L			04/25/14 11:49	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/25/14 11:49	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/25/14 11:49	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 560-101319/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101319

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.377	U	1.00	0.377	mg/L			04/25/14 11:49	1

Lab Sample ID: LCS 560-101319/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101319

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.13		mg/L		101	90 - 110
Nitrate as N	5.00	5.125		mg/L		103	90 - 110
Nitrite as N	5.00	5.132		mg/L		103	90 - 110
Sulfate	20.0	20.49		mg/L		102	90 - 110

Lab Sample ID: 560-46973-1 MS — **Client Sample ID: AOC-EMWL35B-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101319

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	9000		5000	15000		mg/L		120	80 - 120
Nitrate as N	51.5	U	2500	1998		mg/L		80	80 - 120
Nitrite as N	100	U	2500	2561		mg/L		102	80 - 120
Sulfate	1500		10000	10570		mg/L		91	80 - 120

Lab Sample ID: 560-46973-1 MSD — **Client Sample ID: AOC-EMWL35B-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101319

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	9000		5000	17360	N1	mg/L		167	80 - 120	15	20
Nitrate as N	51.5	U	2500	2141		mg/L		86	80 - 120	7	20
Nitrite as N	100	U	2500	2416		mg/L		97	80 - 120	6	20
Sulfate	1500		10000	10170		mg/L		87	80 - 120	4	20

Method: 376.2 - Sulfide

Lab Sample ID: MB 560-101387/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/28/14 14:00	1

Lab Sample ID: LCS 560-101387/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.501	0.5170		mg/L		103	80 - 120

Method: 376.2 - Sulfide (Continued)

Lab Sample ID: 560-46973-1 MS — **Client Sample ID: AOC-EMWL35B-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.0160	J	0.501	0.4880		mg/L		94	75 - 125

Lab Sample ID: 560-46973-1 MSD — **Client Sample ID: AOC-EMWL35B-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide	0.0160	J	0.501	0.4790		mg/L		92	75 - 125	2	20

Method: SM 2320B - Alkalinity

Lab Sample ID: LCS 560-101593/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101593

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	100	96.20		mg/L		96	85 - 115

Lab Sample ID: LCS 560-101593/53 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101593

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	100	100.0		mg/L		100	85 - 115

Method: SM 3500 FE D - Iron, Ferrous

Lab Sample ID: MB 560-101490/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101490

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Ferrous Iron	0.0220	U	0.200	0.0220	mg/L			04/25/14 15:15	1

Lab Sample ID: LCS 560-101490/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101490

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ferrous Iron	0.800	0.7800		mg/L		98	80 - 120

Lab Sample ID: 560-46973-4 MS — **Client Sample ID: AOC-EMWL36T-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101490

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ferrous Iron	0.0830	J HF	0.800	0.3820	N1	mg/L		37	75 - 125

Method: SM 3500 FE D - Iron, Ferrous (Continued)

Lab Sample ID: 560-46973-4 MSD
Matrix: Water
Analysis Batch: 101490

Client Sample ID: AOC-EMWL36T-0414
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ferrous Iron	0.0830	J HF	0.800	0.3900	N1	mg/L		38	75 - 125	2	20

QC Association Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

GC/MS VOA

Analysis Batch: 101328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46970-A-5 MS	Matrix Spike	Total/NA	Water	8260B	
560-46970-A-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
560-46973-1	AOC-EMWL35B-0414	Total/NA	Water	8260B	
560-46973-2	AOC-TB02	Total/NA	Water	8260B	
560-46973-3	AOC-EMWL34T-0414	Total/NA	Water	8260B	
560-46973-4	AOC-EMWL36T-0414	Total/NA	Water	8260B	
560-46973-5	AOC-EMWL36T-0414-1	Total/NA	Water	8260B	
560-46973-6	AOC-OWL14R-0414	Total/NA	Water	8260B	
560-46973-7	AOC-LPZ40-0414	Total/NA	Water	8260B	
560-46973-8	AOC-EMWU42T-0414	Total/NA	Water	8260B	
560-46973-9	AOC-MWU38-0414	Total/NA	Water	8260B	
560-46973-11	AOC-LPZ41-0414	Total/NA	Water	8260B	
560-46973-12	AOC-LPZ41-0414-1	Total/NA	Water	8260B	
560-46973-13	AOC-MWU36-0414	Total/NA	Water	8260B	
560-46973-14	AOC-PZ06-0414	Total/NA	Water	8260B	
LCS 560-101328/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-101328/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 101337

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46973-10	AOC-MWU37-0414-3	Total/NA	Water	8260B	
560-46973-10 MS	AOC-MWU37-0414-3	Total/NA	Water	8260B	
560-46973-10 MSD	AOC-MWU37-0414-3	Total/NA	Water	8260B	
LCS 560-101337/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-101337/8	Method Blank	Total/NA	Water	8260B	

GC VOA

Analysis Batch: 133678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46970-A-2 MS	Matrix Spike	Total/NA	Water	RSK-175	
560-46970-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	RSK-175	
560-46973-1	AOC-EMWL35B-0414	Total/NA	Water	RSK-175	
560-46973-3	AOC-EMWL34T-0414	Total/NA	Water	RSK-175	
560-46973-4	AOC-EMWL36T-0414	Total/NA	Water	RSK-175	
LCS 600-133678/3	Lab Control Sample	Total/NA	Water	RSK-175	
MB 600-133678/2	Method Blank	Total/NA	Water	RSK-175	

Metals

Prep Batch: 101280

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46973-14	AOC-PZ06-0414	Dissolved	Water	3010A	101355
LCS 560-101280/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 560-101280/1-A	Method Blank	Total/NA	Water	3010A	

Filtration Batch: 101355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46973-14	AOC-PZ06-0414	Dissolved	Water	FILTRATION	

Metals (Continued)

Analysis Batch: 101415

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 560-101280/2-A	Lab Control Sample	Total/NA	Water	6020	101280
MB 560-101280/1-A	Method Blank	Total/NA	Water	6020	101280

Analysis Batch: 101462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46973-14	AOC-PZ06-0414	Dissolved	Water	6020	101280

General Chemistry

Analysis Batch: 101319

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46973-1	AOC-EMWL35B-0414	Total/NA	Water	300.0	
560-46973-1 MS	AOC-EMWL35B-0414	Total/NA	Water	300.0	
560-46973-1 MSD	AOC-EMWL35B-0414	Total/NA	Water	300.0	
560-46973-3	AOC-EMWL34T-0414	Total/NA	Water	300.0	
560-46973-4	AOC-EMWL36T-0414	Total/NA	Water	300.0	
LCS 560-101319/4	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101319/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 101387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46973-1	AOC-EMWL35B-0414	Total/NA	Water	376.2	
560-46973-1 MS	AOC-EMWL35B-0414	Total/NA	Water	376.2	
560-46973-1 MSD	AOC-EMWL35B-0414	Total/NA	Water	376.2	
560-46973-3	AOC-EMWL34T-0414	Total/NA	Water	376.2	
560-46973-4	AOC-EMWL36T-0414	Total/NA	Water	376.2	
LCS 560-101387/4	Lab Control Sample	Total/NA	Water	376.2	
MB 560-101387/3	Method Blank	Total/NA	Water	376.2	

Analysis Batch: 101490

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46973-1	AOC-EMWL35B-0414	Total/NA	Water	SM 3500 FE D	
560-46973-3	AOC-EMWL34T-0414	Total/NA	Water	SM 3500 FE D	
560-46973-4	AOC-EMWL36T-0414	Total/NA	Water	SM 3500 FE D	
560-46973-4 MS	AOC-EMWL36T-0414	Total/NA	Water	SM 3500 FE D	
560-46973-4 MSD	AOC-EMWL36T-0414	Total/NA	Water	SM 3500 FE D	
LCS 560-101490/4	Lab Control Sample	Total/NA	Water	SM 3500 FE D	
MB 560-101490/3	Method Blank	Total/NA	Water	SM 3500 FE D	

Analysis Batch: 101593

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46973-1	AOC-EMWL35B-0414	Total/NA	Water	SM 2320B	
560-46973-3	AOC-EMWL34T-0414	Total/NA	Water	SM 2320B	
560-46973-4	AOC-EMWL36T-0414	Total/NA	Water	SM 2320B	
LCS 560-101593/1	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 560-101593/53	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Client Sample ID: AOC-EMWL35B-0414 — Lab Sample ID: 560-46973-1

Date Collected: 04/22/14 16:50 — **Matrix: Water**
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101328	04/27/14 17:06	RJT	TAL CC
Total/NA	Analysis	RSK-175		75	133678	05/06/14 09:39	JPS	TAL HOU
Total/NA	Analysis	300.0		500	101319	04/25/14 12:33	HMZ	TAL CC
Total/NA	Analysis	376.2		1	101387	04/28/14 14:00	LPO	TAL CC
Total/NA	Analysis	SM 2320B		1	101593	05/02/14 09:20	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		4	101490	04/25/14 15:15	LPO	TAL CC

Client Sample ID: AOC-TB02 — Lab Sample ID: 560-46973-2

Date Collected: 04/22/14 16:30 — **Matrix: Water**
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101328	04/27/14 17:31	RJT	TAL CC

Client Sample ID: AOC-EMWL34T-0414 — Lab Sample ID: 560-46973-3

Date Collected: 04/22/14 17:50 — **Matrix: Water**
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5000	101328	04/27/14 17:56	RJT	TAL CC
Total/NA	Analysis	RSK-175		100	133678	05/06/14 10:04	JPS	TAL HOU
Total/NA	Analysis	300.0		1000	101319	04/25/14 14:01	HMZ	TAL CC
Total/NA	Analysis	376.2		1	101387	04/28/14 14:00	LPO	TAL CC
Total/NA	Analysis	SM 2320B		1	101593	05/02/14 09:20	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101490	04/25/14 15:15	LPO	TAL CC

Client Sample ID: AOC-EMWL36T-0414 — Lab Sample ID: 560-46973-4

Date Collected: 04/22/14 19:25 — **Matrix: Water**
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10000	101328	04/27/14 18:21	RJT	TAL CC
Total/NA	Analysis	RSK-175		100	133678	05/06/14 10:30	JPS	TAL HOU
Total/NA	Analysis	300.0		1000	101319	04/25/14 14:23	HMZ	TAL CC
Total/NA	Analysis	376.2		1	101387	04/28/14 14:00	LPO	TAL CC
Total/NA	Analysis	SM 2320B		1	101593	05/02/14 09:20	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101490	04/25/14 15:15	LPO	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Client Sample ID: AOC-EMWL36T-0414-1 — Lab Sample ID: 560-46973-5

Date Collected: 04/22/14 19:25 — **Matrix: Water**
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10000	101328	04/27/14 18:46	RJT	TAL CC

Client Sample ID: AOC-OWL14R-0414 — Lab Sample ID: 560-46973-6

Date Collected: 04/23/14 08:25 — **Matrix: Water**
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101328	04/27/14 19:11	RJT	TAL CC

Client Sample ID: AOC-LPZ40-0414 — Lab Sample ID: 560-46973-7

Date Collected: 04/23/14 09:15 — **Matrix: Water**
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	101328	04/27/14 19:36	RJT	TAL CC

Client Sample ID: AOC-EMWU42T-0414 — Lab Sample ID: 560-46973-8

Date Collected: 04/23/14 09:55 — **Matrix: Water**
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	101328	04/27/14 20:01	RJT	TAL CC

Client Sample ID: AOC-MWU38-0414 — Lab Sample ID: 560-46973-9

Date Collected: 04/23/14 10:35 — **Matrix: Water**
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	101328	04/27/14 20:26	RJT	TAL CC

Client Sample ID: AOC-MWU37-0414-3 — Lab Sample ID: 560-46973-10

Date Collected: 04/23/14 11:20 — **Matrix: Water**
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101337	04/28/14 11:45	RP56	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Client Sample ID: AOC-LPZ41-0414

Lab Sample ID: 560-46973-11

Date Collected: 04/23/14 12:53
Matrix: Water
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101328	04/27/14 20:51	RJT	TAL CC

Client Sample ID: AOC-LPZ41-0414-1

Lab Sample ID: 560-46973-12

Date Collected: 04/23/14 12:50
Matrix: Water
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101328	04/27/14 21:16	RJT	TAL CC

Client Sample ID: AOC-MWU36-0414

Lab Sample ID: 560-46973-13

Date Collected: 04/23/14 14:05
Matrix: Water
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		100	101328	04/27/14 21:40	RJT	TAL CC

Client Sample ID: AOC-PZ06-0414

Lab Sample ID: 560-46973-14

Date Collected: 04/23/14 16:25
Matrix: Water
Date Received: 04/23/14 16:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2000	101328	04/27/14 22:06	RJT	TAL CC
Dissolved	Filtration	FILTRATION			101355	04/25/14 10:03	EDR	TAL CC
Dissolved	Prep	3010A			101280	04/25/14 11:00	RLM	TAL CC
Dissolved	Analysis	6020		1	101462	04/29/14 11:52	JEM	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Certification Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Laboratory: TestAmerica Corpus Christi

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Bicarbonate Alkalinity as CaCO3
SM 2320B		Water	Carbonate Alkalinity as CaCO3
SM 2320B		Water	Hydroxide Alkalinity
SM 2320B		Water	Phenolphthalein Alkalinity
SM 2320B		Water	Total Alkalinity as CaCO3
SM 3500 FE D		Water	Ferrous Iron

Laboratory: TestAmerica Houston

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704223	10-31-14

Method Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC
RSK-175	Dissolved Gases (GC)	RSK	TAL HOU
6020	Metals (ICP/MS)	SW846	TAL CC
300.0	Anions, Ion Chromatography	MCAWW	TAL CC
376.2	Sulfide	MCAWW	TAL CC
SM 2320B	Alkalinity	SM	TAL CC
SM 3500 FE D	Iron, Ferrous	SM	TAL CC

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-46973-1	AOC-EMWL35B-0414	Water	04/22/14 16:50	04/23/14 16:45
560-46973-2	AOC-TB02	Water	04/22/14 16:30	04/23/14 16:45
560-46973-3	AOC-EMWL34T-0414	Water	04/22/14 17:50	04/23/14 16:45
560-46973-4	AOC-EMWL36T-0414	Water	04/22/14 19:25	04/23/14 16:45
560-46973-5	AOC-EMWL36T-0414-1	Water	04/22/14 19:25	04/23/14 16:45
560-46973-6	AOC-OWL14R-0414	Water	04/23/14 08:25	04/23/14 16:45
560-46973-7	AOC-LPZ40-0414	Water	04/23/14 09:15	04/23/14 16:45
560-46973-8	AOC-EMWU42T-0414	Water	04/23/14 09:55	04/23/14 16:45
560-46973-9	AOC-MWU38-0414	Water	04/23/14 10:35	04/23/14 16:45
560-46973-10	AOC-MWU37-0414-3	Water	04/23/14 11:20	04/23/14 16:45
560-46973-11	AOC-LPZ41-0414	Water	04/23/14 12:53	04/23/14 16:45
560-46973-12	AOC-LPZ41-0414-1	Water	04/23/14 12:50	04/23/14 16:45
560-46973-13	AOC-MWU36-0414	Water	04/23/14 14:05	04/23/14 16:45
560-46973-14	AOC-PZ06-0414	Water	04/23/14 16:25	04/23/14 16:45

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAmerica

Client Information	Sampler: Liz Rinehart/John Sorkness	Lab PM: Salcher, Neal	Carrier Tracking No(s):	COC No: 560-13299-862.6
Client Contact: David Zuvanich	Phone: 210-219-1561	E-Mail: neal.salcher@testamericainc.com		Page: Page 1 of 2
Company: El Paso Energy Corporation				Job #:
Address: 1001 Louisiana Street Room S1905B	Due Date Requested:			Loc: 560 46973
City: Houston	TAT Requested (days):			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: WD# 208570			
Project Name: Elementis AOC Groundwater	Project #: 56000079			
Site:	SSOW#:			

Analysis Requested

Preservation: A - HCL; B - NaOH; C - Zn Ac; D - Nitric; E - NaHS; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - ph 4-5; Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - Benzene	E300.0 - SO4, NO3, NO2	SM3500-Ferrous Fe, Alk	SM4500 S2D - Sulfide	RSK175 - methane	Total Number of containers	Special Instr
			Preservation Code:				N	N	N	BC	A		
~~AOC-L35B~~ AOC-EMWL35B-0414	4/22/14	1650	G	Water	N	N	X	X	X	X	X	8	
AOC-TB02		1630		Water			X					2	
AOC-EMWL34T-0414		1750		Water			X	X	X	X	X	8	
AOC-EMWL36T-0414		1925		Water			X	X	X	X	X	8	
AOC-EMWL36T-0414-1		1925		Water			X					3	
AOC-OWL14R-0414	4/23/14	0825		Water			X					3	
AOC-LPZ40-0414		0915		Water			X					3	
AOC-EMWU42T-0414		0955		Water			X					3	
AOC-MWU38-0414		1035		Water			X					3	
AOC-MWU37-0414-3		1120		Water		Y	X					6	MS/MSD
AOC-LPZ41-0414		1250		Water		N	X					3	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	4-23-14 / 1610	URS	[signature]	4/23/14 1610	URS
[signature]	4/23/14 1645	URS	[signature]	4/23/14 16:45	TACC

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: obs 3.9°C cor 4.0°C IR4

560-46973 Chain of Custody

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Liz Brabant/John Sorkness	Lab PM: Salcher, Neal	Carrier Tracking No(s):	COC No: 560-13299-862.6
Client Contact: David Zuvanich	Phone: 210-219-1561	E-Mail: neal.salcher@testamericainc.com		Page: Page 2 of 2
Company: El Paso Energy Corporation				Job #:

Analysis Requested

Address: 1001 Louisiana Street Room S1905B	Due Date Requested:
City: Houston	TAT Requested (days):
State, Zip: TX, 77002	
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required
Email:	WO #: WD# 208570
Project Name: Elementis AOC Groundwater	Project #: 56000079
Site:	SSOW#:

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - Benzene	SW7196 - hex chrome	SW8020 - Cumene	SW7196 - hex chrome	SW8020D - Cumene	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	N	N	N	N	N	X	
AOC-LPZ41-0414-1	4/23/14	1250	G	Water	N	N	X					3	
AOC-MW436-0414	↓	1405	↓	Water	↓	↓	X					3	
~~AOC-PZ06-0414~~	~~↓~~		~~↓~~	~~Water~~			~~X~~	~~X~~	~~X~~	~~O~~	~~ER~~	~~5~~	~~ER~~
AOC-PZ06-0414	4/23/14	1625	G	Water	N	N	X			X	X	5	
				Water									
				Water									
				Water									
				Water									
				Water									
				Water									
				Water									

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	4-23-14/1610	URS	[signature]	4/23/14 1610	URS
[signature]	4/23/14 1645	URS	[signature]	4/23/14 16:45	TACC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: Obs 3.9°C corr 4.0°C +R4

Page 26 of 38

6/10/2014

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-46973-1

Login Number: 46973

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-46973-1

Login Number: 46973
List Number: 2
Creator: Lockett, DuJuan D

List Source: TestAmerica Houston
List Creation: 04/25/14 05:01 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	IR 545
Cooler Temperature is recorded.	True	2.8 / 3.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	False	Preservation labels on samples match COC
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	Check done at department level as required.

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-46973-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.140	ug/L	8260B

Method: RSK-175 - Dissolved Gases (GC)

Analyte	MQL	MDL	Units	Method
Methane	1.00	0.357	ug/L	RSK-175

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	MQL	MDL	Units	Method
Chromium	0.00500	0.00140	mg/L	6020

General Chemistry

Analyte	MQL	MDL	Units	Method
Chloride	1.00	0.192	mg/L	300.0
Nitrate as N	0.500	0.103	mg/L	300.0
Nitrite as N	0.500	0.200	mg/L	300.0
Sulfate	1.00	0.377	mg/L	300.0
Sulfide	0.0500	0.0131	mg/L	376.2
Bicarbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Carbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Hydroxide Alkalinity	5.00	5.00	mg/L	SM 2320B
Phenolphthalein Alkalinity	5.00	5.00	mg/L	SM 2320B
Total Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Ferrous Iron	0.200	0.0220	mg/L	SM 3500 FE D

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-46973-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Sophia Shah		6/10/2014
Name (printed)	Signature	Date

Project Management Assistant
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/19/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46973-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?		X			R03A
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			R07C
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				R10A
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		X			R10B
		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" must be included in the laboratory data package submitted 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 Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/19/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46973-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?	X				
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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 Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/19/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-46973-1
Reviewer Name:	Neal Salcher		

ER #[1]	Description
R03A	Method SM 3500 FE D: The following samples were received outside of holding time: 560-46973-1, 560-46973-2, and 560-46973-4. Batch: 101490
R07C	Method 300.0: 560-46973-1 MSD failed the recovery criteria for the following analyte(s): Chloride. Matrix interference is suspected. Method SM 3500 FE D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 101490 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.Method: 3500 Fe D
R10A	Hexavalen Chromium was inadvertently not analyzed. Client will resample.
R10B	Method 8260B: The following sample was diluted due to the abundance of a non-target analyte: 560-46973-13. Elevated reporting limits (RLs) are provided.8260B#101328 Method 8260B: The following volatiles samples were diluted due to foaming: 560-46973: 7,8,9. Elevated reporting limits (RLs) are provided.8260B#101328

1. Items identified by the letter “R” must be included in the laboratory data package submitted 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).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica - Corpus Christi

TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	10/01/2013 - 3Q13
METHOD NUMBER:	6020/200.8
METHOD DESCRIPTION:	ICPMS
PREP METHOD:	3010A
INSTRUMENT:	Agilent ICPMS

		SPIKE RANGE				
ANALYTE	CURRENT MDL (ug/L)	MINIMUM (ug/L)	MAXIMUM (ug/L)	SPIKE (ug/L)	MEAS VALUE (ug/L)	ANALYTE IS DETECTED
Aluminum	22.5	22.5	67.5	100	52.2	yes
Antimony	1.61	1.61	4.83	4	1.98	yes
Arsenic	1.09	1.09	3.27	4	1.63	yes
Barium	0.81	0.81	2.43	4	3.19	yes
Beryllium	1.24	1.24	3.72	5	2.17	yes
Boron	70	70	210	100	109	yes
Cadmium	0.854	0.854	2.562	4	1.36	yes
Calcium	198	198	594	400	265	yes
Chromium	1.4	1.4	4.2	5	2.52	yes
Cobalt	1.36	1.36	4.08	4	1.62	yes
Copper	2	2	6	4	37.5	yes
Iron	101	101	303	200	169	yes
Lead	0.733	0.733	2.199	4	1.66	yes
Lithium	2.26	2.26	6.78	5	2.48	yes
Magnesium	113	113	339	200	142	yes
Manganese	11.6	11.6	34.8	40	25.4	yes
Molybdenum	1.4	1.4	4.2	4	1.75	yes
Nickel	2.17	2.17	6.51	4	7.11	yes
Phosphorus	18.1	18.1	54.3	40	35.2	yes
Potassium	407	407	1221	1000	632	yes
Selenium	1.08	1.08	3.24	2	1.61	yes
Silicon	62.8	62.8	188.4	200	2070	yes
Silver	0.941	0.941	2.823	4	1.9	yes
Sodium	727	727	2181	2000	1730	yes
Strontium	0.768	0.768	2.304	4	1.84	yes
Thallium	0.693	0.693	2.079	2	1.51	yes
Tin	5.08	5.08	15.24	10	6.42	yes
Titanium	1.53	1.53	4.59	4	1.68	yes
Vanadium	1.44	1.44	4.32	4	3.67	yes
Zinc	3.55	3.55	10.65	4	8.92	yes

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TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	12/30/2013 - 4Q13
METHOD NUMBER:	8260B
METHOD DESCRIPTION:	GC/MS
PREP METHOD:	5030B
INSTRUMENT:	VGCMS # 1

ANALYTE	CURRENT MDL (ug/L)	SPIKE RANGE MINIMUM (ug/L)	SPIKE RANGE MAXIMUM (ug/L)	SPIKE (ug/L)	MEAS VALUE (ug/L)	ANALYTE IS DETECTED
1,1,1,2-Tetrachloroethane	0.209	0.209	0.627	0.5	0.415	yes
1,1,1-Trichloroethane	0.3	0.3	0.9	0.5	0.411	yes
1,1,2,2-Tetrachloroethane	0.19	0.19	0.57	0.5	0.361	yes
1,1,2-Trichloro-1,2,2-trifluoroethane	0.278	0.278	0.834	0.5	0.418	yes
1,1,2-Trichloroethane	0.173	0.173	0.519	0.5	0.451	yes
1,1-Dichloroethane	0.168	0.168	0.504	0.5	0.503	yes
1,1-Dichloroethene	0.3	0.3	0.9	0.5	0.514	yes
1,1-Dichloropropene	0.185	0.185	0.555	0.5	0.582	yes
1,2,3-Trichlorobenzene	0.217	0.217	0.651	0.5	0.425	yes
1,2,3-Trichloropropane	0.191	0.191	0.573	0.5	0.293	yes
1,2,4-Trichlorobenzene	0.168	0.168	0.504	0.5	0.435	yes
1,2,4-Trimethylbenzene	0.2	0.2	0.6	0.5	0.361	yes
1,2-Dibromo-3-Chloropropane	0.349	0.349	1.047	1	0.597	yes
1,2-Dibromoethane	0.15	0.15	0.45	0.3	0.165	yes
1,2-Dichlorobenzene	0.117	0.117	0.351	0.3	0.317	yes
1,2-Dichloroethane	0.16	0.16	0.48	0.5	0.47	yes
1,2-Dichloropropane	0.173	0.173	0.519	0.5	0.442	yes
1,3,5-Trichlorobenzene	0.203	0.203	0.609	0.3	0.322	yes
1,3,5-Trimethylbenzene	0.2	0.2	0.6	0.3	0.227	yes
1,3-Dichlorobenzene	0.128	0.128	0.384	0.3	0.291	yes
1,3-Dichloropropane	0.146	0.146	0.438	0.3	0.204	yes
1,4-Dichlorobenzene	0.2	0.2	0.6	0.3	0.341	yes
1,4-Dioxane	7.46	7.46	22.38	20	9.06	yes
1-Chlorohexane	0.5	0.5	1.5	1	2.31	yes
1-Octene	0.44	0.44	1.32	1	0.447	yes
2,2-Dichloropropane	0.335	0.335	1.005	1	1.07	yes
2-Chloro-1,3-butadiene	0.2	0.2	0.6	0.5	0.46	yes
2-Chloroethyl vinyl ether	0.191	0.191	0.573	1	1.27	yes
2-Chlorotoluene	0.155	0.155	0.465	0.3	0.244	yes
2-Hexanone	0.2	0.2	0.6	1	0.564	yes
2-Nitropropane	0.225	0.225	0.675	1	4.17	yes
4-Chlorotoluene	0.242	0.242	0.726	0.5	0.41	yes
4-Isopropyltoluene	0.15	0.15	0.45	0.3	0.241	yes
4-Methyl-2-pentanone (MIBK)	0.116	0.116	0.348	0.3	0.124	yes
Acetone	5	5	15	5	5.94	yes
Acetonitrile	10	10	30	20	19.7	yes
Acrolein	5	5	15	10	14.4	yes
Acrylonitrile	1.93	1.93	5.79	5	7.56	yes
Allyl chloride	0.421	0.421	1.263	0.5	0.5	yes
Benzene	0.14	0.14	0.42	0.3	0.353	yes
Benzyl chloride	0.278	0.278	0.834	0.5	3.05	yes
Bromobenzene	0.128	0.128	0.384	0.3	0.25	yes
Bromodichloromethane	0.175	0.175	0.525	0.3	0.246	yes
Bromoform	0.5	0.5	1.5	1	0.673	yes
Bromomethane	0.392	0.392	1.176	0.5	0.548	yes
Butadiene	0.3	0.3	0.9	0.5	0.782	yes
Carbon disulfide	0.5	0.5	1.5	0.5	0.606	yes
Carbon tetrachloride	0.251	0.251	0.753	0.5	0.487	yes
Chlorobenzene	0.136	0.136	0.408	0.3	0.299	yes
Chlorobromomethane	0.228	0.228	0.684	0.5	0.398	yes
Chlorodibromomethane	0.223	0.223	0.669	0.5	0.737	yes
Chloroethane	0.4	0.4	1.2	0.5	0.545	yes
Chloroform	0.173	0.173	0.519	0.3	0.293	yes
Chloromethane	0.39	0.39	1.17	0.5	0.686	yes
cis-1,2-Dichloroethene	0.121	0.121	0.363	0.3	0.276	yes
cis-1,3-Dichloropropene	0.146	0.146	0.438	0.3	0.588	yes
cis-1,4-Dichloro-2-butene	0.5	0.5	1.5	0.5	9.63	yes

Cyclohexane	1	1	3	2	1.71	yes
Cyclohexanone	5	5	15	10	6.21	yes
Dibromomethane	0.165	0.165	0.495	0.5	0.499	yes
Dichlorodifluoromethane	0.429	0.429	1.287	1	1.08	yes
Ethyl acetate	1	1	3	1	3	yes
Ethyl ether	0.135	0.135	0.405	0.5	0.356	yes
Ethyl methacrylate	0.5	0.5	1.5	1	0.769	yes
Ethylbenzene	0.2	0.2	0.6	0.3	0.26	yes
Ethylene Oxide	9.2	9.2	27.6	20	13.1	yes
Hexachlorobutadiene	0.86	0.86	2.58	1	0.973	yes
Hexane	2	2	6	5	4.13	yes
Iodomethane	0.223	0.223	0.669	0.3	0.303	yes
Isobutyl alcohol	3.39	3.39	10.17	40	41.7	yes
Isooctane	0.5	0.5	1.5	1	0.799	yes
Isopropylbenzene	0.2	0.2	0.6	0.3	0.246	yes
m-Xylene & p-Xylene	0.26	0.26	0.78	2	1.94	yes
Methacrylonitrile	1.55	1.55	4.65	10	9.93	yes
Methyl ethyl ketone (MEK)	1	1	3	1	2.03	yes
Methyl methacrylate	0.196	0.196	0.588	1	0.827	yes
Methyl tert-butyl ether	0.2	0.2	0.6	0.3	0.319	yes
Methylene Chloride	2	2	6	2	2.29	yes
n-Butylbenzene	0.2	0.2	0.6	0.3	0.265	yes
n-Heptane	0.3	0.3	0.9	0.5	0.376	yes
N-Propylbenzene	0.106	0.106	0.318	0.3	0.247	yes
Naphthalene	0.2	0.2	0.6	0.5	0.296	yes
o-Xylene	0.2	0.2	0.6	0.3	0.26	yes
Pentachloroethane	0.302	0.302	0.906	1	0.772	yes
Propionitrile	2.69	2.69	8.07	10	10.3	yes
sec-Butylbenzene	0.3	0.3	0.9	0.5	0.373	yes
Styrene	0.2	0.2	0.6	0.5	0.668	yes
tert-Butylbenzene	0.2	0.2	0.6	0.3	0.233	yes
Tetrachloroethene	0.189	0.189	0.567	0.3	0.289	yes
Toluene	0.3	0.3	0.9	0.3	0.352	yes
trans-1,2-Dichloroethene	0.2	0.2	0.6	0.5	0.436	yes
trans-1,3-Dichloropropene	0.2	0.2	0.6	0.3	0.65	yes
trans-1,4-Dichloro-2-butene	0.5	0.5	1.5	1	0.598	yes
Trichloroethene	0.317	0.317	0.951	0.5	0.48	yes
Trichlorofluoromethane	0.244	0.244	0.732	0.5	0.494	yes
Vinyl acetate	0.3	0.3	0.9	1	2.72	yes
Vinyl chloride	0.3	0.3	0.9	0.5	0.58	yes
Xylenes, Total	0.226	0.226	0.678	0.9	0.798	yes

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TestAmerica - Corpus Christi

TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	1Q13
LAB:	organic Chemistry (Wet Lab
JOB #:	560-33719-1

ANALYTE	CURRENT MDL (mg/L)	SPIKE RANGE MINIMUM (mg/L)	SPIKE RANGE MAXIMUM (mg/L)	SPIKE (mg/L)	MEAS VALUE (mg/L)	ANALYTE IS DETECTED
Alkalinity, Titration Method 2320B	1.29	1.29	3.87	3	0.6	yes
Ammonia (as Nitrogen) Method 350.1 by SEAL AQ2	0.045	0.045	0.135	0.1	0.27	yes
Chemical Oxygen Demand (COD) Colorimetric by HACH8000	3.11	3.11	9.33	10	17.5	yes
HEM (Oil & Grease) 1664A_NP	0.78	0.78	2.34	1.96	1.5	yes
Total Organic Carbon (TOC) by SM5310B	0.285	0.285	0.855	0.5	0.693	yes
EPA 300 Anions, Ion Chromotography						
Bromide	0.315	0.315	0.945	0.5	0.829	yes
Chloride	0.192	0.192	0.576	0.5	0.567	yes
Nitrate as N	0.103	0.103	0.309	0.2	0.45	yes
Nitrate Nitrite as N	0.2	0.2	0.6	0.4	0.785	yes
Nitrite as N	0.2	0.2	0.6	0.2	0.335	yes
Sulfate	0.377	0.377	1.131	1	1.68	yes
Chloride by 325.2	5	5	15	5	5	yes
Cyanide, Total 335.4	0.0082	0.0082	0.0246	0.02	0.0339	yes
Orthophosphate as P by 365.3	0.0141	0.0141	0.0423	0.03	0.031	yes
Sulfide by 376.2	0.0131	0.0131	0.0393	0.0301	0.019	yes
Ferrous Iron by SM3500 FeD	0.022	0.022	0.066	0.05	0.043	yes
Chlorine, Total Residual	0.0766	0.0766	0.2298	0.1	0.15	yes
Fluoride (Ion -selective electrode) by SM4500 F C	0.02	0.02	0.06	0.05	0.0624	yes
Nitrite as N by SM4500 NO2 B	0.002	0.002	0.006	0.005	0.005	yes
Sulfite by SM4500 SO3 B	2	2	6	2	2	yes
MBAS by SM5540C	0.036	0.036	0.108	0.05	0.054	yes

Matrix: Water
Method: RSK_175
Prep Method: Pass
Date Analyzed: 3/4/2014
Job #: 600-87854
TALS Batch: 128709
Units: ug/L

Analyte	Instrument #	MDL	DCS Spike	Measured Result	MQL
Ethane	FID14	0.303	0.388	0.366	2
Ethylene	FID14	0.324	0.362	0.296	2
Methane	FID14	0.357	0.2064	0.280	2
Propane	FID14	0.746	0.5672	0.435	2
Propene	FID14	0.659	0.5432	0.513	2

DCS = Detection Check Standard
MQL = Method Quantitation Limit

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-47001-1
Client Project/Site: Elementis Groundwater
Revision: 1

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
6/6/2014 5:49:24 PM

John Cady, Manager of Project Management
(713)690-4444
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LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

GC VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

Metals

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
H	Sample was prepped or analyzed beyond the specified holding time
U	Analyte was not detected at or above the SDL.

General Chemistry

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 560-47001-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-47001-1

Comments
This report was revised on 6/6/2014 to correct the TRRP Checklist.

Receipt
The samples were received on 4/24/2014 2:47 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 2.8º C.

Detection Summary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-47001-1

Client Sample ID: AOC-EPZ05-0414 — Lab Sample ID: 560-47001-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Methane	177		10.0	3.57	ug/L	10		RSK-175	Total/NA

Client Sample ID: AOC-TB07 — Lab Sample ID: 560-47001-2

No Detections.

Client Sample ID: AOC-PZ05-0414 — Lab Sample ID: 560-47001-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0108		0.00500	0.00140	mg/L	1		6020	Dissolved

Client Sample ID: AOC-MWU28-0414 — Lab Sample ID: 560-47001-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.00159	J	0.00500	0.00140	mg/L	1		6020	Dissolved

Client Sample ID: AOC-MWU31-0414 — Lab Sample ID: 560-47001-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	8420		100	14.0	ug/L	100		8260B	Total/NA
Methane	2.51		1.00	0.357	ug/L	1		RSK-175	Total/NA
Chromium	0.00610		0.00500	0.00140	mg/L	1		6020	Dissolved
Chloride	6900		500	96.0	mg/L	500		300.0	Total/NA
Nitrate as N	0.558		0.500	0.103	mg/L	1		300.0	Total/NA
Sulfate	2090		500	189	mg/L	500		300.0	Total/NA
Sulfide	0.0370	J	0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	853		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	853		5.00	5.00	mg/L	1		SM 2320B	Total/NA

Client Sample ID: AOC-EMW49-0414 — Lab Sample ID: 560-47001-6

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	8110		500	96.0	mg/L	500		300.0	Total/NA
Nitrate as N	1.42		0.500	0.103	mg/L	1		300.0	Total/NA
Sulfate	1770		500	189	mg/L	500		300.0	Total/NA
Sulfide	0.0340	J	0.0500	0.0131	mg/L	1		376.2	Total/NA
Total Alkalinity as CaCO3	659		5.00	5.00	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	659		5.00	5.00	mg/L	1		SM 2320B	Total/NA

Client Sample ID: AOC-EMW50-0414-3 — Lab Sample ID: 560-47001-7

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0239		0.00500	0.00140	mg/L	1		6020	Dissolved

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-47001-1

Client Sample ID: AOC-EPZ05-0414

Lab Sample ID: 560-47001-1
Date Collected: 04/24/14 08:40
Matrix: Water
Date Received: 04/24/14 14:47

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	177		10.0	3.57	ug/L			05/06/14 15:39	10

Client Sample ID: AOC-TB07

Lab Sample ID: 560-47001-2
Date Collected: 04/24/14 08:00
Matrix: Water
Date Received: 04/24/14 14:47

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/27/14 22:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*04/27/14 22:31*	*1*
Dibromofluoromethane (Surr)	*97*		*69 - 130*		*04/27/14 22:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*		*04/27/14 22:31*	*1*
Toluene-d8 (Surr)	*102*		*70 - 130*		*04/27/14 22:31*	*1*

Client Sample ID: AOC-PZ05-0414

Lab Sample ID: 560-47001-3
Date Collected: 04/24/14 09:15
Matrix: Water
Date Received: 04/24/14 14:47

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/27/14 22:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*04/27/14 22:55*	*1*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*04/27/14 22:55*	*1*
Dibromofluoromethane (Surr)	*96*		*69 - 130*		*04/27/14 22:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 140*		*04/27/14 22:55*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.0108		0.00500	0.00140	mg/L		04/28/14 10:00	04/29/14 13:09	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium VI	0.00360	U	0.00500	0.00360	mg/L			04/25/14 09:00	1

Client Sample ID: AOC-MWU28-0414

Lab Sample ID: 560-47001-4
Date Collected: 04/24/14 10:00
Matrix: Water
Date Received: 04/24/14 14:47

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/27/14 23:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/27/14 23:20*	*1*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*		*04/27/14 23:20*	*1*
Dibromofluoromethane (Surr)	*97*		*69 - 130*		*04/27/14 23:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 140*		*04/27/14 23:20*	*1*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-47001-1

Client Sample ID: AOC-MWU28-0414 — Lab Sample ID: 560-47001-4

Date Collected: 04/24/14 10:00 — **Matrix: Water**
Date Received: 04/24/14 14:47

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**0.00159**	**J**	0.00500	0.00140	mg/L		04/28/14 10:00	04/29/14 13:14	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium VI	0.00360	U	0.00500	0.00360	mg/L			04/25/14 09:00	1

Client Sample ID: AOC-MWU31-0414 — Lab Sample ID: 560-47001-5

Date Collected: 04/24/14 10:35 — **Matrix: Water**
Date Received: 04/24/14 14:47

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**8420**		100	14.0	ug/L			04/27/14 23:45	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/27/14 23:45*	*100*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*		*04/27/14 23:45*	*100*
Dibromofluoromethane (Surr)	*100*		*69 - 130*		*04/27/14 23:45*	*100*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*04/27/14 23:45*	*100*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**2.51**		1.00	0.357	ug/L			05/06/14 13:46	1

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**0.00610**		0.00500	0.00140	mg/L		04/28/14 10:00	04/29/14 13:20	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**6900**		500	96.0	mg/L			04/28/14 21:33	500
Nitrate as N	**0.558**		0.500	0.103	mg/L			04/25/14 23:56	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/25/14 23:56	1
Sulfate	**2090**		500	189	mg/L			04/28/14 21:33	500
Sulfide	**0.0370**	**J**	0.0500	0.0131	mg/L			04/28/14 14:00	1
Chromium VI	0.00360	U	0.00500	0.00360	mg/L			04/25/14 09:00	1
Total Alkalinity as CaCO3	**853**		5.00	5.00	mg/L			05/06/14 16:30	1
Bicarbonate Alkalinity as CaCO3	**853**		5.00	5.00	mg/L			05/06/14 16:30	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/06/14 16:30	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/06/14 16:30	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/06/14 16:30	1
Ferrous Iron	0.0220	U HF	0.200	0.0220	mg/L			04/28/14 16:00	1

Client Sample ID: AOC-EMW49-0414 — Lab Sample ID: 560-47001-6

Date Collected: 04/24/14 11:15 — **Matrix: Water**
Date Received: 04/24/14 14:47

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/28/14 12:21	1

Client Sample ID: AOC-EMW49-0414

Lab Sample ID: 560-47001-6

Date Collected: 04/24/14 11:15

Matrix: Water

Date Received: 04/24/14 14:47

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/28/14 12:21*	*1*
4-Bromofluorobenzene (Surr)	*116*		*70 - 130*		*04/28/14 12:21*	*1*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*04/28/14 12:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*		*04/28/14 12:21*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.357	U	1.00	0.357	ug/L			05/06/14 13:56	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**8110**		500	96.0	mg/L			04/28/14 21:55	500
Nitrate as N	**1.42**		0.500	0.103	mg/L			04/26/14 00:18	1
Nitrite as N	100	U	250	100	mg/L			04/28/14 21:55	500
Sulfate	**1770**		500	189	mg/L			04/28/14 21:55	500
Sulfide	**0.0340**	**J**	0.0500	0.0131	mg/L			04/28/14 14:00	1
Total Alkalinity as CaCO3	**659**		5.00	5.00	mg/L			05/06/14 16:30	1
Bicarbonate Alkalinity as CaCO3	**659**		5.00	5.00	mg/L			05/06/14 16:30	1
Carbonate Alkalinity as CaCO3	5.00	U	5.00	5.00	mg/L			05/06/14 16:30	1
Hydroxide Alkalinity	5.00	U	5.00	5.00	mg/L			05/06/14 16:30	1
Phenolphthalein Alkalinity	5.00	U	5.00	5.00	mg/L			05/06/14 16:30	1
Ferrous Iron	0.0220	U HF	0.200	0.0220	mg/L			04/28/14 16:00	1

Client Sample ID: AOC-EMW50-0414-3

Lab Sample ID: 560-47001-7

Date Collected: 04/24/14 11:55

Matrix: Water

Date Received: 04/24/14 14:47

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/28/14 11:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*04/28/14 11:55*	*1*
4-Bromofluorobenzene (Surr)	*115*		*70 - 130*		*04/28/14 11:55*	*1*
Dibromofluoromethane (Surr)	*98*		*69 - 130*		*04/28/14 11:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*04/28/14 11:55*	*1*

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**0.0239**		0.00500	0.00140	mg/L		04/29/14 10:30	04/29/14 12:45	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium VI	0.00360	U	0.00500	0.00360	mg/L			04/25/14 09:00	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 560-101328/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101328

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/27/14 15:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*		*04/27/14 15:25*	*1*
Dibromofluoromethane (Surr)	*92*		*69 - 130*		*04/27/14 15:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*04/27/14 15:25*	*1*
Toluene-d8 (Surr)	*94*		*70 - 130*		*04/27/14 15:25*	*1*

Lab Sample ID: LCS 560-101328/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101328

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	25.50		ug/L		102	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*
Toluene-d8 (Surr)	*97*		*70 - 130*

Lab Sample ID: 560-46970-A-5 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101328

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	1360000		750000	1998000		ug/L		85	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
Dibromofluoromethane (Surr)	*97*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 140*
Toluene-d8 (Surr)	*101*		*70 - 130*

Lab Sample ID: 560-46970-A-5 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101328

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	1360000		750000	2082000		ug/L		97	70 - 130	4	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*96*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 140*
Toluene-d8 (Surr)	*99*		*70 - 130*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 560-101339/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101339

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/28/14 11:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*		*04/28/14 11:30*	*1*
Dibromofluoromethane (Surr)	*92*		*69 - 130*		*04/28/14 11:30*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*		*04/28/14 11:30*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/28/14 11:30*	*1*

Lab Sample ID: LCS 560-101339/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101339

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	24.06		ug/L		96	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*
Toluene-d8 (Surr)	*102*		*70 - 130*

Lab Sample ID: 560-47001-7 MS — **Client Sample ID: AOC-EMW50-0414-3**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101339

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.140	U	25.0	24.90		ug/L		100	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*70 - 130*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*
Dibromofluoromethane (Surr)	*101*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*

Lab Sample ID: 560-47001-7 MSD — **Client Sample ID: AOC-EMW50-0414-3**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101339

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.140	U	25.0	24.44		ug/L		98	70 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 600-133678/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.357	U	1.00	0.357	ug/L			05/05/14 10:47	1

Lab Sample ID: LCS 600-133678/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	5.16	4.662		ug/L		90	70 - 130

Lab Sample ID: 560-46970-A-2 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	0.908	J	5.16	5.689		ug/L		93	70 - 130

Lab Sample ID: 560-46970-A-2 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	0.908	J	5.16	5.533		ug/L		90	70 - 130	3	30

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 560-101385/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101462 — **Prep Batch: 101385**

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.00140	U	0.00500	0.00140	mg/L		04/28/14 10:00	04/29/14 12:27	1

Lab Sample ID: LCS 560-101385/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101462 — **Prep Batch: 101385**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	0.500	0.4675		mg/L		94	80 - 120

Lab Sample ID: 560-47001-7 MS — **Client Sample ID: AOC-EMW50-0414-3**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 101462 — **Prep Batch: 101419**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	0.0239		0.500	0.4844	H	mg/L		92	80 - 120

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 560-47001-7 MSD — **Client Sample ID: AOC-EMW50-0414-3**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 101462 — **Prep Batch: 101419**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	0.0239		0.500	0.4741	H	mg/L		90	80 - 120	2	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 560-101319/31 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101319

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.192	U	1.00	0.192	mg/L			04/25/14 22:05	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/25/14 22:05	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/25/14 22:05	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/25/14 22:05	1

Lab Sample ID: LCS 560-101319/32 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101319

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.19		mg/L		102	90 - 110
Nitrate as N	5.00	5.126		mg/L		103	90 - 110
Nitrite as N	5.00	5.125		mg/L		103	90 - 110
Sulfate	20.0	20.56		mg/L		103	90 - 110

Lab Sample ID: 560-46584-C-5 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101319

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	221		100	310.7		mg/L		90	80 - 120
Nitrate as N	1.03	U	50.0	42.99		mg/L		86	80 - 120
Nitrite as N	2.00	U	50.0	48.09		mg/L		96	80 - 120
Sulfate	23.8		200	198.5		mg/L		87	80 - 120

Lab Sample ID: 560-46584-C-5 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101319

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	221		100	315.7		mg/L		95	80 - 120	2	20
Nitrate as N	1.03	U	50.0	43.17		mg/L		86	80 - 120	0	20
Nitrite as N	2.00	U	50.0	47.82		mg/L		96	80 - 120	1	20
Sulfate	23.8		200	199.4		mg/L		88	80 - 120	0	20

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 560-101407/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101407

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.192	U	1.00	0.192	mg/L			04/28/14 17:30	1
Nitrate as N	0.103	U	0.500	0.103	mg/L			04/28/14 17:30	1
Nitrite as N	0.200	U	0.500	0.200	mg/L			04/28/14 17:30	1
Sulfate	0.377	U	1.00	0.377	mg/L			04/28/14 17:30	1

Lab Sample ID: LCS 560-101407/5 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101407

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.949		mg/L		99	90 - 110
Nitrate as N	5.00	5.022		mg/L		100	90 - 110
Nitrite as N	5.00	4.971		mg/L		99	90 - 110
Sulfate	20.0	20.03		mg/L		100	90 - 110

Lab Sample ID: 560-46963-B-1 MS ^10 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101407

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	119		100	207.2		mg/L		88	80 - 120
Sulfate	72.0		200	262.6		mg/L		95	80 - 120

Lab Sample ID: 560-46963-B-1 MSD ^10 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101407

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	119		100	214.2		mg/L		95	80 - 120	3	20
Sulfate	72.0		200	257.9		mg/L		93	80 - 120	2	20

Method: 376.2 - Sulfide

Lab Sample ID: MB 560-101387/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	0.0131	U	0.0500	0.0131	mg/L			04/28/14 14:00	1

Lab Sample ID: LCS 560-101387/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.501	0.5170		mg/L		103	80 - 120

Method: 376.2 - Sulfide (Continued)

Lab Sample ID: 560-46973-E-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfide	0.0160	J	0.501	0.4880		mg/L		94	75 - 125		

Lab Sample ID: 560-46973-E-1 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101387

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide	0.0160	J	0.501	0.4790		mg/L		92	75 - 125	2	20

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 560-101545/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101545

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium VI	0.00360	U	0.00500	0.00360	mg/L			04/25/14 09:00	1

Lab Sample ID: LCS 560-101545/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101545

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium VI			0.200	0.1950		mg/L		98	85 - 115		

Lab Sample ID: 560-47001-7 MS — **Client Sample ID: AOC-EMW50-0414-3**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101545

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium VI	0.00360	U	0.200	0.1970		mg/L		99	85 - 115		

Lab Sample ID: 560-47001-7 MSD — **Client Sample ID: AOC-EMW50-0414-3**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101545

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium VI	0.00360	U	0.200	0.1940		mg/L		97	85 - 115	2	20

Method: SM 2320B - Alkalinity

Lab Sample ID: LCS 560-101685/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101685

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Alkalinity as CaCO3			100	97.20		mg/L		97	85 - 115		

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCS 560-101685/10 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101685

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Alkalinity as CaCO3			100	97.60		mg/L		98	85 - 115		

Lab Sample ID: 560-47143-F-6 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101685

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Alkalinity as CaCO3	646		100	736.0	4	mg/L		90	75 - 125		

Lab Sample ID: 560-47143-F-6 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101685

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Alkalinity as CaCO3	646		100	739.6	4	mg/L		94	75 - 125	0	20

Method: SM 3500 FE D - Iron, Ferrous

Lab Sample ID: MB 560-101569/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101569

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Ferrous Iron	0.0220	U	0.200	0.0220	mg/L			04/28/14 16:00	1

Lab Sample ID: LCS 560-101569/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101569

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ferrous Iron			0.800	0.8040		mg/L		101	80 - 120		

Lab Sample ID: 560-47001-5 MS — **Client Sample ID: AOC-MWU31-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101569

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ferrous Iron	0.0220	U HF	0.800	0.9430		mg/L		118	75 - 125		

Lab Sample ID: 560-47001-5 MSD — **Client Sample ID: AOC-MWU31-0414**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 101569

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ferrous Iron	0.0220	U HF	0.800	0.9600		mg/L		120	75 - 125	2	20

QC Association Summary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-47001-1

GC/MS VOA

Analysis Batch: 101328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46970-A-5 MS	Matrix Spike	Total/NA	Water	8260B	
560-46970-A-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
560-47001-2	AOC-TB07	Total/NA	Water	8260B	
560-47001-3	AOC-PZ05-0414	Total/NA	Water	8260B	
560-47001-4	AOC-MWU28-0414	Total/NA	Water	8260B	
560-47001-5	AOC-MWU31-0414	Total/NA	Water	8260B	
LCS 560-101328/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-101328/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 101339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-47001-6	AOC-EMW49-0414	Total/NA	Water	8260B	
560-47001-7	AOC-EMW50-0414-3	Total/NA	Water	8260B	
560-47001-7 MS	AOC-EMW50-0414-3	Total/NA	Water	8260B	
560-47001-7 MSD	AOC-EMW50-0414-3	Total/NA	Water	8260B	
LCS 560-101339/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-101339/8	Method Blank	Total/NA	Water	8260B	

GC VOA

Analysis Batch: 133678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46970-A-2 MS	Matrix Spike	Total/NA	Water	RSK-175	
560-46970-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	RSK-175	
560-47001-1	AOC-EPZ05-0414	Total/NA	Water	RSK-175	
560-47001-5	AOC-MWU31-0414	Total/NA	Water	RSK-175	
560-47001-6	AOC-EMW49-0414	Total/NA	Water	RSK-175	
LCS 600-133678/3	Lab Control Sample	Total/NA	Water	RSK-175	
MB 600-133678/2	Method Blank	Total/NA	Water	RSK-175	

Metals

Filtration Batch: 101276

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-47001-3	AOC-PZ05-0414	Dissolved	Water	FILTRATION	
560-47001-4	AOC-MWU28-0414	Dissolved	Water	FILTRATION	
560-47001-7	AOC-EMW50-0414-3	Dissolved	Water	FILTRATION	
560-47001-7 MS	AOC-EMW50-0414-3	Dissolved	Water	FILTRATION	
560-47001-7 MSD	AOC-EMW50-0414-3	Dissolved	Water	FILTRATION	

Filtration Batch: 101355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-47001-5	AOC-MWU31-0414	Dissolved	Water	FILTRATION	

Prep Batch: 101385

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-47001-3	AOC-PZ05-0414	Dissolved	Water	3010A	101276
560-47001-4	AOC-MWU28-0414	Dissolved	Water	3010A	101276
560-47001-5	AOC-MWU31-0414	Dissolved	Water	3010A	101355
LCS 560-101385/2-A	Lab Control Sample	Total/NA	Water	3010A	

Metals (Continued)

Prep Batch: 101385 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 560-101385/1-A	Method Blank	Total/NA	Water	3010A	

Prep Batch: 101419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-47001-7	AOC-EMW50-0414-3	Dissolved	Water	3010A	101276
560-47001-7 MS	AOC-EMW50-0414-3	Dissolved	Water	3010A	101276
560-47001-7 MSD	AOC-EMW50-0414-3	Dissolved	Water	3010A	101276

Analysis Batch: 101462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-47001-3	AOC-PZ05-0414	Dissolved	Water	6020	101385
560-47001-4	AOC-MWU28-0414	Dissolved	Water	6020	101385
560-47001-5	AOC-MWU31-0414	Dissolved	Water	6020	101385
560-47001-7	AOC-EMW50-0414-3	Dissolved	Water	6020	101419
560-47001-7 MS	AOC-EMW50-0414-3	Dissolved	Water	6020	101419
560-47001-7 MSD	AOC-EMW50-0414-3	Dissolved	Water	6020	101419
LCS 560-101385/2-A	Lab Control Sample	Total/NA	Water	6020	101385
MB 560-101385/1-A	Method Blank	Total/NA	Water	6020	101385

General Chemistry

Analysis Batch: 101319

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46584-C-5 MS	Matrix Spike	Total/NA	Water	300.0	
560-46584-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	
560-47001-5	AOC-MWU31-0414	Total/NA	Water	300.0	
560-47001-6	AOC-EMW49-0414	Total/NA	Water	300.0	
LCS 560-101319/32	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101319/31	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 101387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46973-E-1 MS	Matrix Spike	Total/NA	Water	376.2	
560-46973-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	376.2	
560-47001-5	AOC-MWU31-0414	Total/NA	Water	376.2	
560-47001-6	AOC-EMW49-0414	Total/NA	Water	376.2	
LCS 560-101387/4	Lab Control Sample	Total/NA	Water	376.2	
MB 560-101387/3	Method Blank	Total/NA	Water	376.2	

Analysis Batch: 101407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46963-B-1 MS ^10	Matrix Spike	Total/NA	Water	300.0	
560-46963-B-1 MSD ^10	Matrix Spike Duplicate	Total/NA	Water	300.0	
560-47001-5	AOC-MWU31-0414	Total/NA	Water	300.0	
560-47001-6	AOC-EMW49-0414	Total/NA	Water	300.0	
LCS 560-101407/5	Lab Control Sample	Total/NA	Water	300.0	
MB 560-101407/4	Method Blank	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 101545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-47001-3	AOC-PZ05-0414	Total/NA	Water	7196A	
560-47001-4	AOC-MWU28-0414	Total/NA	Water	7196A	
560-47001-5	AOC-MWU31-0414	Total/NA	Water	7196A	
560-47001-7	AOC-EMW50-0414-3	Total/NA	Water	7196A	
560-47001-7 MS	AOC-EMW50-0414-3	Total/NA	Water	7196A	
560-47001-7 MSD	AOC-EMW50-0414-3	Total/NA	Water	7196A	
LCS 560-101545/4	Lab Control Sample	Total/NA	Water	7196A	
MB 560-101545/3	Method Blank	Total/NA	Water	7196A	

Analysis Batch: 101569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-47001-5	AOC-MWU31-0414	Total/NA	Water	SM 3500 FE D	
560-47001-5 MS	AOC-MWU31-0414	Total/NA	Water	SM 3500 FE D	
560-47001-5 MSD	AOC-MWU31-0414	Total/NA	Water	SM 3500 FE D	
560-47001-6	AOC-EMW49-0414	Total/NA	Water	SM 3500 FE D	
LCS 560-101569/4	Lab Control Sample	Total/NA	Water	SM 3500 FE D	
MB 560-101569/3	Method Blank	Total/NA	Water	SM 3500 FE D	

Analysis Batch: 101685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-47001-5	AOC-MWU31-0414	Total/NA	Water	SM 2320B	
560-47001-6	AOC-EMW49-0414	Total/NA	Water	SM 2320B	
560-47143-F-6 MS	Matrix Spike	Total/NA	Water	SM 2320B	
560-47143-F-6 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 2320B	
LCS 560-101685/1	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 560-101685/10	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-47001-1

Client Sample ID: AOC-EPZ05-0414 — Lab Sample ID: 560-47001-1

Date Collected: 04/24/14 08:40 — **Matrix: Water**
Date Received: 04/24/14 14:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		10	133678	05/06/14 15:39	JPS	TAL HOU

Client Sample ID: AOC-TB07 — Lab Sample ID: 560-47001-2

Date Collected: 04/24/14 08:00 — **Matrix: Water**
Date Received: 04/24/14 14:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101328	04/27/14 22:31	RJT	TAL CC

Client Sample ID: AOC-PZ05-0414 — Lab Sample ID: 560-47001-3

Date Collected: 04/24/14 09:15 — **Matrix: Water**
Date Received: 04/24/14 14:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101328	04/27/14 22:55	RJT	TAL CC
Dissolved	Filtration	FILTRATION			101276	04/25/14 10:17	RLM	TAL CC
Dissolved	Prep	3010A			101385	04/28/14 10:00	EDR	TAL CC
Dissolved	Analysis	6020		1	101462	04/29/14 13:09	JEM	TAL CC
Total/NA	Analysis	7196A		1	101545	04/25/14 09:00	EDR	TAL CC

Client Sample ID: AOC-MWU28-0414 — Lab Sample ID: 560-47001-4

Date Collected: 04/24/14 10:00 — **Matrix: Water**
Date Received: 04/24/14 14:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101328	04/27/14 23:20	RJT	TAL CC
Dissolved	Filtration	FILTRATION			101276	04/25/14 10:17	RLM	TAL CC
Dissolved	Prep	3010A			101385	04/28/14 10:00	EDR	TAL CC
Dissolved	Analysis	6020		1	101462	04/29/14 13:14	JEM	TAL CC
Total/NA	Analysis	7196A		1	101545	04/25/14 09:00	EDR	TAL CC

Client Sample ID: AOC-MWU31-0414 — Lab Sample ID: 560-47001-5

Date Collected: 04/24/14 10:35 — **Matrix: Water**
Date Received: 04/24/14 14:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		100	101328	04/27/14 23:45	RJT	TAL CC
Total/NA	Analysis	RSK-175		1	133678	05/06/14 13:46	JPS	TAL HOU
Dissolved	Filtration	FILTRATION			101355	04/25/14 10:03	EDR	TAL CC
Dissolved	Prep	3010A			101385	04/28/14 10:00	EDR	TAL CC
Dissolved	Analysis	6020		1	101462	04/29/14 13:20	JEM	TAL CC
Total/NA	Analysis	300.0		1	101319	04/25/14 23:56	HMZ	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-47001-1

Client Sample ID: AOC-MWU31-0414

Lab Sample ID: 560-47001-5

Date Collected: 04/24/14 10:35
Matrix: Water
Date Received: 04/24/14 14:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		500	101407	04/28/14 21:33	HMZ	TAL CC
Total/NA	Analysis	376.2		1	101387	04/28/14 14:00	LPO	TAL CC
Total/NA	Analysis	7196A		1	101545	04/25/14 09:00	EDR	TAL CC
Total/NA	Analysis	SM 2320B		1	101685	05/06/14 16:30	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101569	04/28/14 16:00	LPO	TAL CC

Client Sample ID: AOC-EMW49-0414

Lab Sample ID: 560-47001-6

Date Collected: 04/24/14 11:15
Matrix: Water
Date Received: 04/24/14 14:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101339	04/28/14 12:21	RP56	TAL CC
Total/NA	Analysis	RSK-175		1	133678	05/06/14 13:56	JPS	TAL HOU
Total/NA	Analysis	300.0		1	101319	04/26/14 00:18	HMZ	TAL CC
Total/NA	Analysis	300.0		500	101407	04/28/14 21:55	HMZ	TAL CC
Total/NA	Analysis	376.2		1	101387	04/28/14 14:00	LPO	TAL CC
Total/NA	Analysis	SM 2320B		1	101685	05/06/14 16:30	LMR	TAL CC
Total/NA	Analysis	SM 3500 FE D		1	101569	04/28/14 16:00	LPO	TAL CC

Client Sample ID: AOC-EMW50-0414-3

Lab Sample ID: 560-47001-7

Date Collected: 04/24/14 11:55
Matrix: Water
Date Received: 04/24/14 14:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	101339	04/28/14 11:55	RP56	TAL CC
Dissolved	Filtration	FILTRATION			101276	04/25/14 09:30	RLM	TAL CC
Dissolved	Prep	3010A			101419	04/29/14 10:30	RLM	TAL CC
Dissolved	Analysis	6020		1	101462	04/29/14 12:45	JEM	TAL CC
Total/NA	Analysis	7196A		1	101545	04/25/14 09:00	EDR	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Certification Summary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-47001-1

Laboratory: TestAmerica Corpus Christi

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Bicarbonate Alkalinity as CaCO3
SM 2320B		Water	Carbonate Alkalinity as CaCO3
SM 2320B		Water	Hydroxide Alkalinity
SM 2320B		Water	Phenolphthalein Alkalinity
SM 2320B		Water	Total Alkalinity as CaCO3
SM 3500 FE D		Water	Ferrous Iron

Laboratory: TestAmerica Houston

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704223	10-31-14

Method Summary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-47001-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC
RSK-175	Dissolved Gases (GC)	RSK	TAL HOU
6020	Metals (ICP/MS)	SW846	TAL CC
300.0	Anions, Ion Chromatography	MCAWW	TAL CC
376.2	Sulfide	MCAWW	TAL CC
7196A	Chromium, Hexavalent	SW846	TAL CC
SM 2320B	Alkalinity	SM	TAL CC
SM 3500 FE D	Iron, Ferrous	SM	TAL CC

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-47001-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-47001-1	AOC-EPZ05-0414	Water	04/24/14 08:40	04/24/14 14:47
560-47001-2	AOC-TB07	Water	04/24/14 08:00	04/24/14 14:47
560-47001-3	AOC-PZ05-0414	Water	04/24/14 09:15	04/24/14 14:47
560-47001-4	AOC-MWU28-0414	Water	04/24/14 10:00	04/24/14 14:47
560-47001-5	AOC-MWU31-0414	Water	04/24/14 10:35	04/24/14 14:47
560-47001-6	AOC-EMW49-0414	Water	04/24/14 11:15	04/24/14 14:47
560-47001-7	AOC-EMW50-0414-3	Water	04/24/14 11:55	04/24/14 14:47

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Liz Rinehart/John Sorkness	Lab PM: Salcher, Neal	Carrier Tracking No(s):	COC No: 560-13299-862.6
Client Contact: David Zuvanich	Phone: 210-219-1561	E-Mail: neal.salcher@testamericainc.com		Page: Page 1 of 1
Company: El Paso Energy Corporation				Job #: Loc: 560 47001
Address: 1001 Louisiana Street Room S1905B	Due Date Requested:			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: WD# 208570			
Project Name: Elementis AOC Groundwater	Project #: 56000079			
Site:	SSOW#:			

Analysis Requested

Preservation
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
P - Na2O4S
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - Benzene	RSK175 - methane	SW7196 - hex chrom	SW6020 - Cr only	SM4500S2-D - sulfide	E300.0 - SO4, NO3, NO2	SM350 - Ferrous Fe, Alk							Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	A	N	N	B,C	N	N								
AOC-EPZ05-0414	4/24/14	0840	G	Water	N	N		X												3	
AOC-TB07		0800		Water			X													2	w/HCl
AOC-PZ05-0414		0915		Water			X		X	X										5	
AOC-MW428-0414		1000		Water			X		X	X										5	
AOC-MW431-0414		1035		Water			X	X	X	X	X	X	X							9	
AOC-EMW49-0414		1115		Water			X	X			X	X	X							8	
AOC-EMW50-0414-3		1155		Water		Y	X		X	X										8	(MS/MSD)
				Water																	
				Water																	
				Water																	
				Water																	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if sa
☐ Return To Client ☐ Disposal By La

560-47001 Chain of Custody

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	4-24-14/ 1430	WRS		4-24-14 1430	ORS
	4/24/14 1447	ORS		4/24/14 14:47	TACC

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 32.6°C cor 2.8°C IR4

6/6/2014

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-47001-1

Login Number: 47001

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-47001-1

Login Number: 47001
List Number: 2
Creator: Culik, Marie E

List Source: TestAmerica Houston
List Creation: 04/29/14 11:23 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-47001-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.140	ug/L	8260B

Method: RSK-175 - Dissolved Gases (GC)

Analyte	MQL	MDL	Units	Method
Methane	1.00	0.357	ug/L	RSK-175

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	MQL	MDL	Units	Method
Chromium	0.00500	0.00140	mg/L	6020

General Chemistry

Analyte	MQL	MDL	Units	Method
Chloride	1.00	0.192	mg/L	300.0
Nitrate as N	0.500	0.103	mg/L	300.0
Nitrite as N	0.500	0.200	mg/L	300.0
Sulfate	1.00	0.377	mg/L	300.0
Sulfide	0.0500	0.0131	mg/L	376.2
Chromium VI	0.00500	0.00360	mg/L	7196A
Bicarbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Carbonate Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Hydroxide Alkalinity	5.00	5.00	mg/L	SM 2320B
Phenolphthalein Alkalinity	5.00	5.00	mg/L	SM 2320B
Total Alkalinity as CaCO3	5.00	5.00	mg/L	SM 2320B
Ferrous Iron	0.200	0.0220	mg/L	SM 3500 FE D

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-47001-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Sophia Shah		6/6/2014
Name (printed)	Signature	Date

Project Management Assistant
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	6/4/2014
Project Name:	Elementis Groundwater	Laboratory Job Number:	560-47001-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?		X			R10A
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		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" must be included in the laboratory data package submitted 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 Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	6/4/2014
Project Name:	Elementis Groundwater	Laboratory Job Number:	560-47001-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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.
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5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	6/4/2014
Project Name:	Elementis Groundwater	Laboratory Job Number:	560-47001-1
Reviewer Name:	Neal Salcher		

ER #[1]	Description
R10A	Method SM 3500 FE D: The method requested is normally performed in the field. Performing this method in the laboratory can lead to a variance in results from the field test.

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica - Corpus Christi

TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	10/01/2013 - 3Q13
METHOD NUMBER:	6020/200.8
METHOD DESCRIPTION:	ICPMS
PREP METHOD:	3010A
INSTRUMENT:	Agilent ICPMS

		SPIKE RANGE				
ANALYTE	CURRENT MDL (ug/L)	MINIMUM (ug/L)	MAXIMUM (ug/L)	SPIKE (ug/L)	MEAS VALUE (ug/L)	ANALYTE IS DETECTED
Aluminum	22.5	22.5	67.5	100	52.2	yes
Antimony	1.61	1.61	4.83	4	1.98	yes
Arsenic	1.09	1.09	3.27	4	1.63	yes
Barium	0.81	0.81	2.43	4	3.19	yes
Beryllium	1.24	1.24	3.72	5	2.17	yes
Boron	70	70	210	100	109	yes
Cadmium	0.854	0.854	2.562	4	1.36	yes
Calcium	198	198	594	400	265	yes
Chromium	1.4	1.4	4.2	5	2.52	yes
Cobalt	1.36	1.36	4.08	4	1.62	yes
Copper	2	2	6	4	37.5	yes
Iron	101	101	303	200	169	yes
Lead	0.733	0.733	2.199	4	1.66	yes
Lithium	2.26	2.26	6.78	5	2.48	yes
Magnesium	113	113	339	200	142	yes
Manganese	11.6	11.6	34.8	40	25.4	yes
Molybdenum	1.4	1.4	4.2	4	1.75	yes
Nickel	2.17	2.17	6.51	4	7.11	yes
Phosphorus	18.1	18.1	54.3	40	35.2	yes
Potassium	407	407	1221	1000	632	yes
Selenium	1.08	1.08	3.24	2	1.61	yes
Silicon	62.8	62.8	188.4	200	2070	yes
Silver	0.941	0.941	2.823	4	1.9	yes
Sodium	727	727	2181	2000	1730	yes
Strontium	0.768	0.768	2.304	4	1.84	yes
Thallium	0.693	0.693	2.079	2	1.51	yes
Tin	5.08	5.08	15.24	10	6.42	yes
Titanium	1.53	1.53	4.59	4	1.68	yes
Vanadium	1.44	1.44	4.32	4	3.67	yes
Zinc	3.55	3.55	10.65	4	8.92	yes

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	12/30/2013 - 4Q13
METHOD NUMBER:	8260B
METHOD DESCRIPTION:	GC/MS
PREP METHOD:	5030B
INSTRUMENT:	VGCMS # 1

ANALYTE	CURRENT MDL (ug/L)	SPIKE RANGE MINIMUM (ug/L)	SPIKE RANGE MAXIMUM (ug/L)	SPIKE (ug/L)	MEAS VALUE (ug/L)	ANALYTE IS DETECTED
1,1,1,2-Tetrachloroethane	0.209	0.209	0.627	0.5	0.415	yes
1,1,1-Trichloroethane	0.3	0.3	0.9	0.5	0.411	yes
1,1,2,2-Tetrachloroethane	0.19	0.19	0.57	0.5	0.361	yes
1,1,2-Trichloro-1,2,2-trifluoroethane	0.278	0.278	0.834	0.5	0.418	yes
1,1,2-Trichloroethane	0.173	0.173	0.519	0.5	0.451	yes
1,1-Dichloroethane	0.168	0.168	0.504	0.5	0.503	yes
1,1-Dichloroethene	0.3	0.3	0.9	0.5	0.514	yes
1,1-Dichloropropene	0.185	0.185	0.555	0.5	0.582	yes
1,2,3-Trichlorobenzene	0.217	0.217	0.651	0.5	0.425	yes
1,2,3-Trichloropropane	0.191	0.191	0.573	0.5	0.293	yes
1,2,4-Trichlorobenzene	0.168	0.168	0.504	0.5	0.435	yes
1,2,4-Trimethylbenzene	0.2	0.2	0.6	0.5	0.361	yes
1,2-Dibromo-3-Chloropropane	0.349	0.349	1.047	1	0.597	yes
1,2-Dibromoethane	0.15	0.15	0.45	0.3	0.165	yes
1,2-Dichlorobenzene	0.117	0.117	0.351	0.3	0.317	yes
1,2-Dichloroethane	0.16	0.16	0.48	0.5	0.47	yes
1,2-Dichloropropane	0.173	0.173	0.519	0.5	0.442	yes
1,3,5-Trichlorobenzene	0.203	0.203	0.609	0.3	0.322	yes
1,3,5-Trimethylbenzene	0.2	0.2	0.6	0.3	0.227	yes
1,3-Dichlorobenzene	0.128	0.128	0.384	0.3	0.291	yes
1,3-Dichloropropane	0.146	0.146	0.438	0.3	0.204	yes
1,4-Dichlorobenzene	0.2	0.2	0.6	0.3	0.341	yes
1,4-Dioxane	7.46	7.46	22.38	20	9.06	yes
1-Chlorohexane	0.5	0.5	1.5	1	2.31	yes
1-Octene	0.44	0.44	1.32	1	0.447	yes
2,2-Dichloropropane	0.335	0.335	1.005	1	1.07	yes
2-Chloro-1,3-butadiene	0.2	0.2	0.6	0.5	0.46	yes
2-Chloroethyl vinyl ether	0.191	0.191	0.573	1	1.27	yes
2-Chlorotoluene	0.155	0.155	0.465	0.3	0.244	yes
2-Hexanone	0.2	0.2	0.6	1	0.564	yes
2-Nitropropane	0.225	0.225	0.675	1	4.17	yes
4-Chlorotoluene	0.242	0.242	0.726	0.5	0.41	yes
4-Isopropyltoluene	0.15	0.15	0.45	0.3	0.241	yes
4-Methyl-2-pentanone (MIBK)	0.116	0.116	0.348	0.3	0.124	yes
Acetone	5	5	15	5	5.94	yes
Acetonitrile	10	10	30	20	19.7	yes
Acrolein	5	5	15	10	14.4	yes
Acrylonitrile	1.93	1.93	5.79	5	7.56	yes
Allyl chloride	0.421	0.421	1.263	0.5	0.5	yes
Benzene	0.14	0.14	0.42	0.3	0.353	yes
Benzyl chloride	0.278	0.278	0.834	0.5	3.05	yes
Bromobenzene	0.128	0.128	0.384	0.3	0.25	yes
Bromodichloromethane	0.175	0.175	0.525	0.3	0.246	yes
Bromoform	0.5	0.5	1.5	1	0.673	yes
Bromomethane	0.392	0.392	1.176	0.5	0.548	yes
Butadiene	0.3	0.3	0.9	0.5	0.782	yes
Carbon disulfide	0.5	0.5	1.5	0.5	0.606	yes
Carbon tetrachloride	0.251	0.251	0.753	0.5	0.487	yes
Chlorobenzene	0.136	0.136	0.408	0.3	0.299	yes
Chlorobromomethane	0.228	0.228	0.684	0.5	0.398	yes
Chlorodibromomethane	0.223	0.223	0.669	0.5	0.737	yes
Chloroethane	0.4	0.4	1.2	0.5	0.545	yes
Chloroform	0.173	0.173	0.519	0.3	0.293	yes
Chloromethane	0.39	0.39	1.17	0.5	0.686	yes
cis-1,2-Dichloroethene	0.121	0.121	0.363	0.3	0.276	yes
cis-1,3-Dichloropropene	0.146	0.146	0.438	0.3	0.588	yes
cis-1,4-Dichloro-2-butene	0.5	0.5	1.5	0.5	9.63	yes

Cyclohexane	1	1	3	2	1.71	yes
Cyclohexanone	5	5	15	10	6.21	yes
Dibromomethane	0.165	0.165	0.495	0.5	0.499	yes
Dichlorodifluoromethane	0.429	0.429	1.287	1	1.08	yes
Ethyl acetate	1	1	3	1	3	yes
Ethyl ether	0.135	0.135	0.405	0.5	0.356	yes
Ethyl methacrylate	0.5	0.5	1.5	1	0.769	yes
Ethylbenzene	0.2	0.2	0.6	0.3	0.26	yes
Ethylene Oxide	9.2	9.2	27.6	20	13.1	yes
Hexachlorobutadiene	0.86	0.86	2.58	1	0.973	yes
Hexane	2	2	6	5	4.13	yes
Iodomethane	0.223	0.223	0.669	0.3	0.303	yes
Isobutyl alcohol	3.39	3.39	10.17	40	41.7	yes
Isooctane	0.5	0.5	1.5	1	0.799	yes
Isopropylbenzene	0.2	0.2	0.6	0.3	0.246	yes
m-Xylene & p-Xylene	0.26	0.26	0.78	2	1.94	yes
Methacrylonitrile	1.55	1.55	4.65	10	9.93	yes
Methyl ethyl ketone (MEK)	1	1	3	1	2.03	yes
Methyl methacrylate	0.196	0.196	0.588	1	0.827	yes
Methyl tert-butyl ether	0.2	0.2	0.6	0.3	0.319	yes
Methylene Chloride	2	2	6	2	2.29	yes
n-Butylbenzene	0.2	0.2	0.6	0.3	0.265	yes
n-Heptane	0.3	0.3	0.9	0.5	0.376	yes
N-Propylbenzene	0.106	0.106	0.318	0.3	0.247	yes
Naphthalene	0.2	0.2	0.6	0.5	0.296	yes
o-Xylene	0.2	0.2	0.6	0.3	0.26	yes
Pentachloroethane	0.302	0.302	0.906	1	0.772	yes
Propionitrile	2.69	2.69	8.07	10	10.3	yes
sec-Butylbenzene	0.3	0.3	0.9	0.5	0.373	yes
Styrene	0.2	0.2	0.6	0.5	0.668	yes
tert-Butylbenzene	0.2	0.2	0.6	0.3	0.233	yes
Tetrachloroethene	0.189	0.189	0.567	0.3	0.289	yes
Toluene	0.3	0.3	0.9	0.3	0.352	yes
trans-1,2-Dichloroethene	0.2	0.2	0.6	0.5	0.436	yes
trans-1,3-Dichloropropene	0.2	0.2	0.6	0.3	0.65	yes
trans-1,4-Dichloro-2-butene	0.5	0.5	1.5	1	0.598	yes
Trichloroethene	0.317	0.317	0.951	0.5	0.48	yes
Trichlorofluoromethane	0.244	0.244	0.732	0.5	0.494	yes
Vinyl acetate	0.3	0.3	0.9	1	2.72	yes
Vinyl chloride	0.3	0.3	0.9	0.5	0.58	yes
Xylenes, Total	0.226	0.226	0.678	0.9	0.798	yes

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TestAmerica - Corpus Christi

TRRP DCS EVALUATION SPREADSHEET - WATER MATRIX

MDLV STUDY INFO	
DATE COMPLETED:	1Q13
LAB:	organic Chemistry (Wet Lal
JOB #:	560-33719-1

ANALYTE	CURRENT MDL (mg/L)	SPIKE RANGE MINIMUM (mg/L)	SPIKE RANGE MAXIMUM (mg/L)	SPIKE (mg/L)	MEAS VALUE (mg/L)	ANALYTE IS DETECTED
Alkalinity, Titration Method 2320B	1.29	1.29	3.87	3	0.6	yes
Ammonia (as Nitrogen) Method 350.1 by SEAL AQ2	0.045	0.045	0.135	0.1	0.27	yes
Chemical Oxygen Demand (COD) Colorimetric by HACH8000	3.11	3.11	9.33	10	17.5	yes
HEM (Oil & Grease) 1664A_NP	0.78	0.78	2.34	1.96	1.5	yes
Total Organic Carbon (TOC) by SM5310B	0.285	0.285	0.855	0.5	0.693	yes
EPA 300 Anions, Ion Chromotography						
Bromide	0.315	0.315	0.945	0.5	0.829	yes
Chloride	0.192	0.192	0.576	0.5	0.567	yes
Nitrate as N	0.103	0.103	0.309	0.2	0.45	yes
Nitrate Nitrite as N	0.2	0.2	0.6	0.4	0.785	yes
Nitrite as N	0.2	0.2	0.6	0.2	0.335	yes
Sulfate	0.377	0.377	1.131	1	1.68	yes
Chloride by 325.2	5	5	15	5	5	yes
Cyanide, Total 335.4	0.0082	0.0082	0.0246	0.02	0.0339	yes
Orthophosphate as P by 365.3	0.0141	0.0141	0.0423	0.03	0.031	yes
Sulfide by 376.2	0.0131	0.0131	0.0393	0.0301	0.019	yes
Ferrous Iron by SM3500 FeD	0.022	0.022	0.066	0.05	0.043	yes
Chlorine, Total Residual	0.0766	0.0766	0.2298	0.1	0.15	yes
Fluoride (Ion -selective electrode) by SM4500 F C	0.02	0.02	0.06	0.05	0.0624	yes
Nitrite as N by SM4500 NO2 B	0.002	0.002	0.006	0.005	0.005	yes
Sulfite by SM4500 SO3 B	2	2	6	2	2	yes
MBAS by SM5540C	0.036	0.036	0.108	0.05	0.054	yes

Matrix: Water
Method: RSK_175
Prep Method: Pass
Date Analyzed: 3/4/2014
Job #: 600-87854
TALS Batch: 128709
Units: ug/L

Analyte	Instrument #	MDL	DCS Spike	Measured Result	MQL
Ethane	FID14	0.303	0.388	0.366	2
Ethylene	FID14	0.324	0.362	0.296	2
Methane	FID14	0.357	0.2064	0.280	2
Propane	FID14	0.746	0.5672	0.435	2
Propene	FID14	0.659	0.5432	0.513	2

DCS = Detection Check Standard
MQL = Method Quantitation Limit

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-47002-1
Client Project/Site: Elementis Groundwater - AOC

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
5/19/2014 5:03:32 PM
Sophia Shah, Project Management Assistant I
sophia.shah@testamericainc.com

Designee for

Neal Salcher, Senior Project Manager
neal.salcher@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: URS Corporation
Project/Site: Elementis Groundwater - AOC

TestAmerica Job ID: 560-47002-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 560-47002-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-47002-1

Comments
No additional comments.

Receipt
The samples were received on 4/24/2014 2:49 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 4.2º C.

Detection Summary

Client: URS Corporation
Project/Site: Elementis Groundwater - AOC

TestAmerica Job ID: 560-47002-1

Client Sample ID: AOC-EMWU6T-0414 — Lab Sample ID: 560-47002-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Methane	4.69		1.00	0.357	ug/L	1		RSK-175	Total/NA

Client Sample ID: AOC-EMWU29T-0414 — Lab Sample ID: 560-47002-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Methane	1.47		1.00	0.357	ug/L	1		RSK-175	Total/NA

Client Sample ID: AOC-EMWU28T-0414 — Lab Sample ID: 560-47002-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Methane	2.58		1.00	0.357	ug/L	1		RSK-175	Total/NA

Client Sample ID: AOC-EMWU26T-0414 — Lab Sample ID: 560-47002-4

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Methane	10.7		1.00	0.357	ug/L	1		RSK-175	Total/NA

Client Sample ID: AOC-EMWU40T-0414 — Lab Sample ID: 560-47002-5

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Methane	715		200	71.4	ug/L	200		RSK-175	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: Elementis Groundwater - AOC

TestAmerica Job ID: 560-47002-1

Client Sample ID: AOC-EMWU6T-0414

Lab Sample ID: 560-47002-1
Date Collected: 04/24/14 08:49
Matrix: Water
Date Received: 04/24/14 14:49

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	4.69		1.00	0.357	ug/L			05/06/14 14:18	1

Client Sample ID: AOC-EMWU29T-0414

Lab Sample ID: 560-47002-2
Date Collected: 04/24/14 09:32
Matrix: Water
Date Received: 04/24/14 14:49

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	1.47		1.00	0.357	ug/L			05/06/14 14:32	1

Client Sample ID: AOC-EMWU28T-0414

Lab Sample ID: 560-47002-3
Date Collected: 04/24/14 10:15
Matrix: Water
Date Received: 04/24/14 14:49

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	2.58		1.00	0.357	ug/L			05/06/14 14:43	1

Client Sample ID: AOC-EMWU26T-0414

Lab Sample ID: 560-47002-4
Date Collected: 04/24/14 11:17
Matrix: Water
Date Received: 04/24/14 14:49

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	10.7		1.00	0.357	ug/L			05/06/14 14:54	1

Client Sample ID: AOC-EMWU40T-0414

Lab Sample ID: 560-47002-5
Date Collected: 04/24/14 12:42
Matrix: Water
Date Received: 04/24/14 14:49

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	715		200	71.4	ug/L			05/06/14 15:51	200

QC Sample Results

Client: URS Corporation
Project/Site: Elementis Groundwater - AOC

TestAmerica Job ID: 560-47002-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 600-133678/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.357	U	1.00	0.357	ug/L			05/05/14 10:47	1

Lab Sample ID: LCS 600-133678/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	5.16	4.662		ug/L		90	70 - 130

Lab Sample ID: 560-46970-A-2 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	0.908	J	5.16	5.689		ug/L		93	70 - 130

Lab Sample ID: 560-46970-A-2 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 133678

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	0.908	J	5.16	5.533		ug/L		90	70 - 130	3	30

QC Association Summary

Client: URS Corporation
Project/Site: Elementis Groundwater - AOC

TestAmerica Job ID: 560-47002-1

GC VOA

Analysis Batch: 133678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-46970-A-2 MS	Matrix Spike	Total/NA	Water	RSK-175	
560-46970-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	RSK-175	
560-47002-1	AOC-EMWU6T-0414	Total/NA	Water	RSK-175	
560-47002-2	AOC-EMWU29T-0414	Total/NA	Water	RSK-175	
560-47002-3	AOC-EMWU28T-0414	Total/NA	Water	RSK-175	
560-47002-4	AOC-EMWU26T-0414	Total/NA	Water	RSK-175	
560-47002-5	AOC-EMWU40T-0414	Total/NA	Water	RSK-175	
LCS 600-133678/3	Lab Control Sample	Total/NA	Water	RSK-175	
MB 600-133678/2	Method Blank	Total/NA	Water	RSK-175	

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis Groundwater - AOC

TestAmerica Job ID: 560-47002-1

Client Sample ID: AOC-EMWU6T-0414 — Lab Sample ID: 560-47002-1

Date Collected: 04/24/14 08:49 — **Matrix: Water**
Date Received: 04/24/14 14:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	133678	05/06/14 14:18	JPS	TAL HOU

Client Sample ID: AOC-EMWU29T-0414 — Lab Sample ID: 560-47002-2

Date Collected: 04/24/14 09:32 — **Matrix: Water**
Date Received: 04/24/14 14:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	133678	05/06/14 14:32	JPS	TAL HOU

Client Sample ID: AOC-EMWU28T-0414 — Lab Sample ID: 560-47002-3

Date Collected: 04/24/14 10:15 — **Matrix: Water**
Date Received: 04/24/14 14:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	133678	05/06/14 14:43	JPS	TAL HOU

Client Sample ID: AOC-EMWU26T-0414 — Lab Sample ID: 560-47002-4

Date Collected: 04/24/14 11:17 — **Matrix: Water**
Date Received: 04/24/14 14:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	133678	05/06/14 14:54	JPS	TAL HOU

Client Sample ID: AOC-EMWU40T-0414 — Lab Sample ID: 560-47002-5

Date Collected: 04/24/14 12:42 — **Matrix: Water**
Date Received: 04/24/14 14:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		200	133678	05/06/14 15:51	JPS	TAL HOU

Laboratory References:

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Certification Summary

Client: URS Corporation
Project/Site: Elementis Groundwater - AOC

TestAmerica Job ID: 560-47002-1

Laboratory: TestAmerica Corpus Christi

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

Laboratory: TestAmerica Houston

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704223	10-31-14

Method Summary

Client: URS Corporation
Project/Site: Elementis Groundwater - AOC

TestAmerica Job ID: 560-47002-1

Method	Method Description	Protocol	Laboratory
RSK-175	Dissolved Gases (GC)	RSK	TAL HOU

Protocol References:

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

Laboratory References:

TAL HOU = TestAmerica Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: URS Corporation
Project/Site: Elementis Groundwater - AOC

TestAmerica Job ID: 560-47002-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-47002-1	AOC-EMWU6T-0414	Water	04/24/14 08:49	04/24/14 14:49
560-47002-2	AOC-EMWU29T-0414	Water	04/24/14 09:32	04/24/14 14:49
560-47002-3	AOC-EMWU28T-0414	Water	04/24/14 10:15	04/24/14 14:49
560-47002-4	AOC-EMWU26T-0414	Water	04/24/14 11:17	04/24/14 14:49
560-47002-5	AOC-EMWU40T-0414	Water	04/24/14 12:42	04/24/14 14:49

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

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Client Information	Sampler: K Pasternak / N Murphy	Lab PM: Salcher, Neal	Carrier Tracking No(s):	COC No: 560-13305-1312.5
Client Contact: David Zuvanich	Phone: 512.825.6225	E-Mail: neal.salcher@testamericainc.com		Page: Page 8 o
Company: El Paso Energy Corporation				Job #: Loc: 560 47002
Address: 1001 Louisiana Street Room S1905B	Due Date Requested:			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: WD# 208570			
Project Name: Elementis IM Groundwater	Project #: 56000079			
Site:	SSOW#:			

Analysis Requested

Preservati
A - HCL
B - NaOH
C - Zn Acetu
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
P - Na2O4S
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	7196A - Hex Cr * 24Hr HT	2320B, 300, 3500_F+2_D_Calc, 3500_FE_D	6020 - Chromium Lab Filtered	376.2 - Sulfide	RSK_175 - Methane Houston	Total Number of containers	Spec
			Preservation Code:				N	N	N	CB	A		
				Water									
AOC-EMWU6T-0414	04/24/14	0849	G	Water	N	N					✓	3	
AOC-EMWU29T-0414	04/24/14	0932	G	Water	N	N					✓	3	
AOC-EMWU28T-0414	04/24/14	1015	G	Water	N	N					✓	3	
AOC-EMWU26T-0414	04/24/14	1117	G	Water	N	N					✓	3	
AOC-EMWU40T-0414	04/24/14	1242	G	Water	N	N					✓	3	
IM-EMWU25T-0414	04/24/14	1356	G	Water	N	N					✓	3	
				Water									
				Water									
				Water									
				Water									

04/24/14

560-47002 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	4/24/14 1447	ORS		4/24/14 1447	TACC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 3b3 4.0 °C Cor 4.2 °C IR4

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-47002-1

Login Number: 47002

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-47002-1

Login Number: 47002
List Number: 2
Creator: Culik, Marie E

List Source: TestAmerica Houston
List Creation: 04/29/14 11:23 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: Elementis Groundwater - AOC

TestAmerica Job ID: 560-47002-1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	MQL	MDL	Units	Method
Methane	1.00	0.357	ug/L	RSK-175

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-47002-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Sophia Shah		5/19/2014
Name (printed)	Signature	Date

Project Management Assistant
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/19/2014
Project Name:	Elementis Groundwater - AOC	Laboratory Job Number:	560-47002-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?			X		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?			X		
		Were MS/MSD analyzed at the appropriate frequency?			X		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
		Were MS/MSD RPDs within laboratory QC limits?			X		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		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" must be included in the laboratory data package submitted 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 Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/19/2014
Project Name:	Elementis Groundwater - AOC	Laboratory Job Number:	560-47002-1
Reviewer Name:	Neal Salcher		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?			X		
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?			X		
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?	X				
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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 Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	5/19/2014
Project Name:	Elementis Groundwater - AOC	Laboratory Job Number:	560-47002-1
Reviewer Name:	Neal Salcher		

ER #[1]	Description

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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.
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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).

Matrix: Water
Method: RSK_175
Prep Method: Pass
Date Analyzed: 3/4/2014
Job #: 600-87854
TALS Batch: 128709
Units: ug/L

Analyte	Instrument #	MDL	DCS Spike	Measured Result	MQL
Ethane	FID14	0.303	0.388	0.366	2
Ethylene	FID14	0.324	0.362	0.296	2
Methane	FID14	0.357	0.2064	0.280	2
Propane	FID14	0.746	0.5672	0.435	2
Propene	FID14	0.659	0.5432	0.513	2

DCS = Detection Check Standard
MQL = Method Quantitation Limit

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-48147-1
Client Project/Site: Elementis Groundwater
Revision: 2

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
6/25/2014 12:18:32 PM

John Cady, Manager of Project Management
(713)690-4444
john.cady@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-48147-1

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Analyte was not detected at or above the SDL.

General Chemistry

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-48147-1

Job ID: 560-48147-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-48147-1

Comments
This is an amended report replacing the original report generated n 6/24/2014 to correct the TRRP LRC.

Receipt
The sample was received on 6/19/2014 2:14 PM; the sample arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 0.6º C.

Detection Summary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-48147-1

Client Sample ID: AOC-PZ06-414R

Lab Sample ID: 560-48147-1

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	3.86		0.00500	0.00140	mg/L	1		6020	Dissolved
Chromium VI	2.38		0.0500	0.0360	mg/L	10		7196A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-48147-1

Client Sample ID: AOC-PZ06-414R

Lab Sample ID: 560-48147-1

Date Collected: 06/19/14 09:55

Matrix: Water

Date Received: 06/19/14 14:14

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	3.86		0.00500	0.00140	mg/L		06/20/14 09:45	06/20/14 20:10	1

General Chemistry

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium VI	2.38		0.0500	0.0360	mg/L			06/19/14 15:00	10

QC Sample Results

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-48147-1

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 560-103557/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 103623 — **Prep Batch: 103557**

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.00140	U	0.00500	0.00140	mg/L		06/20/14 09:45	06/20/14 19:51	1

Lab Sample ID: LCS 560-103557/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 103623 — **Prep Batch: 103557**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	0.500	0.4572		mg/L		91	80 - 120

Lab Sample ID: 560-48147-1 MS — **Client Sample ID: AOC-PZ06-414R**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 103623 — **Prep Batch: 103557**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	3.86		0.500	4.447	4	mg/L		118	80 - 120

Lab Sample ID: 560-48147-1 MSD — **Client Sample ID: AOC-PZ06-414R**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 103623 — **Prep Batch: 103557**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	3.86		0.500	4.287	4	mg/L		86	80 - 120	4	20

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 560-103615/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 103615

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium VI	0.00360	U	0.00500	0.00360	mg/L			06/19/14 15:00	1

Lab Sample ID: LCS 560-103615/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 103615

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium VI	0.200	0.1940		mg/L		97	85 - 115

Lab Sample ID: 560-48147-1 MS — **Client Sample ID: AOC-PZ06-414R**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 103615

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium VI	2.38		2.00	4.680		mg/L		115	85 - 115

Method: 7196A - Chromium, Hexavalent (Continued)

Lab Sample ID: 560-48147-1 MSD
Matrix: Water
Analysis Batch: 103615

Client Sample ID: AOC-PZ06-414R
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium VI	2.38		2.00	4.630		mg/L		113	85 - 115	1	20

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-48147-1

Client Sample ID: AOC-PZ06-414R

Lab Sample ID: 560-48147-1

Date Collected: 06/19/14 09:55

Matrix: Water

Date Received: 06/19/14 14:14

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			103555	06/20/14 09:10	RLM	TAL CC
Dissolved	Prep	3010A			103557	06/20/14 09:45	RLM	TAL CC
Dissolved	Analysis	6020		1	103623	06/20/14 20:10	JEM	TAL CC
Total/NA	Analysis	7196A		10	103615	06/19/14 15:00	EDR	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Certification Summary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-48147-1

Laboratory: TestAmerica Corpus Christi

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

Method Summary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-48147-1

Method	Method Description	Protocol	Laboratory
6020	Metals (ICP/MS)	SW846	TAL CC
7196A	Chromium, Hexavalent	SW846	TAL CC

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Sample Summary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-48147-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-48147-1	AOC-PZ06-414R	Water	06/19/14 09:55	06/19/14 14:14

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAm

Loc: 560
48147

Client Information	Sampler: Kimberly High	Lab PM: Cady, John M	Carrier Tracking No(s):	COC No: 560-13911-1373.1
Client Contact: Ms. Jean Youngerman	Phone: 512 419 5205	E-Mail: john.cady@testamericainc.com		Page: Page 1 of 1
Company: URS Corporation				Job #: 48147
Address: PO BOX 201088	Due Date Requested:			
City: Austin	TAT Requested (days): Normal			
State, Zip: TX, 78720-1088				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email: jean.youngerman@urs.com	WO #: WD# 208570			
Project Name: Elementis Groundwater	Project #: 56000079			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	7196A - Chromium VI	Total CR SW6020-D	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N			
AOC-PZ06-414R	6.19.14	0955	G	Water			X	X		

560-48147 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
KS.	6.19.14 2:10 pm	URS	Brady McDonald	6.19.14 1410	TACC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☒ Yes ☐ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: obs 0.1 cor 0.6 IR4

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-48147-1

Login Number: 48147

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Hicks, Kristina M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-48147-1

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	MQL	MDL	Units	Method
Chromium	0.00500	0.00140	mg/L	6020

General Chemistry

Analyte	MQL	MDL	Units	Method
Chromium VI	0.00500	0.00360	mg/L	7196A

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-48147-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

John Cady	John Cady	6/25/2014
Name (printed)	Signature	Date

Manager of Project Management
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	6/24/2014
Project Name:	Elementis Groundwater	Laboratory Job Number:	560-48147-1
Reviewer Name:	John M Cady		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?			X		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		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" must be included in the laboratory data package submitted 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 Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	6/24/2014
Project Name:	Elementis Groundwater	Laboratory Job Number:	560-48147-1
Reviewer Name:	John M Cady		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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.
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Laboratory Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	6/24/2014
Project Name:	Elementis Groundwater	Laboratory Job Number:	560-48147-1
Reviewer Name:	John M Cady		

ER #[1]	Description
Misc	Method 6020: The following sample was filtered, preserved and then ran accordingly to meet the desired due date. Therfore, it is to be brought up that the sample was not able to sit for the recommended 24 hours in order to hold the pH level of less than 2.

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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).

Detection Check Standard

Matrix:	Soil
Method:	6020
Preparation:	per method
Date Analyzed:	1/6/2014
Date Prepared:	12/10/2014
TALs Batches:	560-44003-1
Units:	mg/Kg

Analyte	MDL	DCS Spike	Measured Result	MQL
Antimony	0.0961	0.313	0.230	0.25
Arsenic	0.0499	0.313	0.207	0.25
Barium	0.109	0.313	0.297	0.25
Cadmium	0.0721	0.313	0.234	0.25
Chromium	0.112	0.313	0.257	0.25
Cobalt	0.0525	0.313	0.299	0.25
Copper	0.177	0.313	1.75	0.5
Iron	5.53	31.3	32.2	25
Lead	0.205	0.313	0.300	0.5
Molybdenum	0.106	0.313	0.127	0.25
Nickel	0.133	0.313	0.307	0.25
Selenium	0.0435	0.313	0.281	0.25
Silver	0.0686	0.313	0.219	0.25
Zinc	0.768	0.625	1.18	1.25

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-49105-1
Client Project/Site: El Paso - Elementis AOC Monitoring
Revision: 1

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
8/8/2014 12:03:48 PM

John Cady, Manager of Project Management
(713)690-4444
john.cady@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: URS Corporation
Project/Site: El Paso - Elementis AOC Monitoring

TestAmerica Job ID: 560-49105-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-49105-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

John M Cady	Johnny Cady	8/8/2014
Name (printed)	Signature	Date

Manager of Project Management
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	8/8/2014
Project Name:	El Paso - Elementis AOC Monitoring	Laboratory Job Number:	560-49105-1
Reviewer Name:	John M Cady		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		X			R10B
		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" must be included in the laboratory data package submitted 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);
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Laboratory Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	8/8/2014
Project Name:	El Paso - Elementis AOC Monitoring	Laboratory Job Number:	560-49105-1
Reviewer Name:	John M Cady		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?			X		
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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.
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Laboratory Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	8/8/2014
Project Name:	El Paso - Elementis AOC Monitoring	Laboratory Job Number:	560-49105-1
Reviewer Name:	John M Cady		

ER #[1]	Description
R10B	Method 8260B: The following sample was diluted due to the abundance of a non-target analyte: 49105-1. Elevated reporting limits (RLs) are provided.8260B#105569.

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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);
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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).

Detection Check Standard

Matrix:	Water
Method:	8260B
Preparation:	5030B
Date Analyzed:	2/17/2014
Date Prepared:	2/17/2014
TALs Batches:	560-45145-1
Units:	ug/L

Analyte	MDL	DCS Spike	Measured Result	MQL
1,1,1,2-Tetrachloroethane	0.209	1	0.912	1
1,1,1-Trichloroethane	0.3	1	1	1
1,1,2,2-Tetrachloroethane	0.19	1	0.84	1
1,1,2-Trichloro-1,2,2-trifluoroetl	0.278	1	0.916	1
1,1,2-Trichloroethane	0.173	1	0.805	1
1,1-Dichloroethane	0.168	1	1.05	1
2-Nitropropane	0.225	2	2.09	5
4-Bromofluorobenzene (Surr)		30	29.6	
4-Chlorotoluene	0.242	1	1.05	1
4-Isopropyltoluene	0.15	1	0.759	1
4-Methyl-2-pentanone (MIBK)	0.116	1	<5.00	5
Acetone	5	1	<10.0	10
Acetonitrile	10	10	<50.0	50
Acrolein	5	10	16.5	50
Acrylonitrile	1.93	10	14.4	10
Allyl chloride	0.421	1	0.95	1
Benzene	0.14	1	1.07	1
Benzyl chloride	0.278	1	1.32	5
Bromobenzene	0.128	1	0.955	1
Bromodichloromethane	0.175	1	0.944	1
Bromoform	0.5	1	1.11	5
Bromomethane	0.392	1	1.29	5
Butadiene	0.3	1	1.11	1
Carbon disulfide	0.5	1	1.02	5
Carbon tetrachloride	0.251	1	1.03	1
Chlorobenzene	0.136	1	1.07	1
Chlorobromomethane	0.228	1	0.922	1
Chlorodibromomethane	0.223	1	0.742	1
Chloroethane	0.4	1	0.949	5
Chloroform	0.173	1	1.12	1
Chloromethane	0.39	1	1.12	5
cis-1,2-Dichloroethene	0.121	1	0.903	1
cis-1,3-Dichloropropene	0.146	1	1.16	1
Cyclohexane	1	1	<2.00	2
Cyclohexanone	5	5	<50.0	50
Dibromofluoromethane (Surr)		30	31.2	
Dibromomethane	0.165	1	0.985	1
Dichlorodifluoromethane	0.429	1	0.947	5
Ethyl acetate	1	2	2.26	5

Ethyl ether	0.31	1		1.05	5
Ethyl methacrylate	0.5	1		0.704	5
Ethylbenzene	0.2	1		0.975	1
Ethylene oxide	9.2	4	<20.0		20
Hexachlorobutadiene	0.86	1		1.16	5
Hexane	2	1	<5.00		5
Iodomethane	0.223	1		1.13	2
Isobutyl alcohol	3.39	25		23.6	50
Isooctane	0.5	1		0.66	5
Isopropylbenzene	0.2	1		0.823	5
Methacrylonitrile	1.55	10		9.09	2.5
Methyl ethyl ketone (MEK)	1	1	<20.0		20
Methyl methacrylate	0.196	2		2.49	5
Methyl tert-butyl ether	0.2	1		1.1	1
Methylene Chloride	2	1	<5.00		5
m-Xylene & p-Xylene	0.26	1		0.881	2
Naphthalene	0.2	1		1.13	5
n-Butylbenzene	0.2	1		0.71	1
n-Heptane	0.3	1		0.899	5
N-Propylbenzene	0.106	1		0.907	1
o-Xylene	0.2	1		0.841	1
Pentachloroethane	0.302	1		0.824	5
Propionitrile	2.69	10		10.1	10
sec-Butylbenzene	0.3	1		0.814	2
Styrene	0.2	1		0.657	1
tert-Butylbenzene	0.2	1		0.801	2
Tetrachloroethene	0.189	1		0.965	1
Toluene	0.3	1		1	1
Toluene-d8 (Surr)		30		29.8	
trans-1,2-Dichloroethene	0.2	1		0.955	1
trans-1,3-Dichloropropene	0.2	1		1.15	1
trans-1,4-Dichloro-2-butene	0.5	1		1.66	5
Trichloroethene	0.317	1		0.948	1
Trichlorofluoromethane	0.244	1		0.985	1
Vinyl acetate	0.3	2		2.16	5
Vinyl chloride	0.3	1		0.947	1
Xylenes, Total	0.226	2		1.72	3

Case Narrative

Client: URS Corporation
Project/Site: El Paso - Elementis AOC Monitoring

TestAmerica Job ID: 560-49105-1

Job ID: 560-49105-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-49105-1

Comments
This is a revised report to include the TRRP LRC.

Receipt
The samples were received on 8/5/2014 3:13 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 5.0º C.

Detection Summary

Client: URS Corporation
Project/Site: El Paso - Elementis AOC Monitoring

TestAmerica Job ID: 560-49105-1

Client Sample ID: AOC-EMWU3T-0814 — Lab Sample ID: 560-49105-1

No Detections.

Client Sample ID: AOC-TB01-0814 — Lab Sample ID: 560-49105-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: El Paso - Elementis AOC Monitoring

TestAmerica Job ID: 560-49105-1

Client Sample ID: AOC-EMWU3T-0814

Lab Sample ID: 560-49105-1

Date Collected: 08/05/14 11:45

Matrix: Water

Date Received: 08/05/14 15:13

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.80	U	20.0	2.80	ug/L			08/07/14 15:43	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*08/07/14 15:43*	*20*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*08/07/14 15:43*	*20*
Dibromofluoromethane (Surr)	*107*		*69 - 130*		*08/07/14 15:43*	*20*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*08/07/14 15:43*	*20*

Client Sample ID: AOC-TB01-0814

Lab Sample ID: 560-49105-2

Date Collected: 08/05/14 00:00

Matrix: Water

Date Received: 08/05/14 15:13

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			08/07/14 15:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*08/07/14 15:18*	*1*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*		*08/07/14 15:18*	*1*
Dibromofluoromethane (Surr)	*103*		*69 - 130*		*08/07/14 15:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*		*08/07/14 15:18*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 560-105569/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 105569

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			08/07/14 12:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*08/07/14 12:48*	*1*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*		*08/07/14 12:48*	*1*
Dibromofluoromethane (Surr)	*102*		*69 - 130*		*08/07/14 12:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 140*		*08/07/14 12:48*	*1*

Lab Sample ID: LCS 560-105569/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 105569

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	26.03		ug/L		104	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 140*

Lab Sample ID: 560-49132-A-9 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 105569

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.140	U	25.0	27.29		ug/L		109	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*

Lab Sample ID: 560-49132-A-9 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 105569

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.140	U	25.0	28.13		ug/L		113	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 140*

QC Association Summary

Client: URS Corporation
Project/Site: El Paso - Elementis AOC Monitoring

TestAmerica Job ID: 560-49105-1

GC/MS VOA

Analysis Batch: 105569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-49105-1	AOC-EMWU3T-0814	Total/NA	Water	8260B	
560-49105-2	AOC-TB01-0814	Total/NA	Water	8260B	
560-49132-A-9 MS	Matrix Spike	Total/NA	Water	8260B	
560-49132-A-9 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
LCS 560-105569/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-105569/8	Method Blank	Total/NA	Water	8260B	

Lab Chronicle

Client: URS Corporation
Project/Site: El Paso - Elementis AOC Monitoring

TestAmerica Job ID: 560-49105-1

Client Sample ID: AOC-EMWU3T-0814

Lab Sample ID: 560-49105-1

Date Collected: 08/05/14 11:45

Matrix: Water

Date Received: 08/05/14 15:13

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		20	105569	08/07/14 15:43	RP56	TAL CC

Client Sample ID: AOC-TB01-0814

Lab Sample ID: 560-49105-2

Date Collected: 08/05/14 00:00

Matrix: Water

Date Received: 08/05/14 15:13

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	105569	08/07/14 15:18	RP56	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Certification Summary

Client: URS Corporation
Project/Site: El Paso - Elementis AOC Monitoring

TestAmerica Job ID: 560-49105-1

Laboratory: TestAmerica Corpus Christi

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

Method Summary

Client: URS Corporation
Project/Site: El Paso - Elementis AOC Monitoring

TestAmerica Job ID: 560-49105-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Sample Summary

Client: URS Corporation
Project/Site: El Paso - Elementis AOC Monitoring

TestAmerica Job ID: 560-49105-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-49105-1	AOC-EMWU3T-0814	Water	08/05/14 11:45	08/05/14 15:13
560-49105-2	AOC-TB01-0814	Water	08/05/14 00:00	08/05/14 15:13

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☑

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Loc: 560
49105

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
URS / EL PASO CO.	DAVID ZUVANICH	8/5/14	272330
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page ____ of ____**
711 N. CARANCAHUA ST. SUITE 1620	713-420-3414	49105	

City	State	Zip Code	Site Contact	Lab Contact
CORPUS CHRISTI	TX	78401	JEAN YOUNGERMAN	T. KELLOG

Project Name and Location (State): EL PASO - ELEMENTIS AOC MONITORING

Carrier/Waybill Number:

Contract/Purchase Order/Quote No.:

Analysis (Attach list if more space is needed): BENZENE 8260

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Other	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Other	BENZENE 8260	Special Instructions/ Conditions of Receipt
AOC-EMNUST-0814	8/5/14	1145		X				X							3	BENZENE ONLY
AOC-TB01-0814	8/5/14	1145		X				X							2	FIELD QC

560-49105 Chain of Custody

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☑ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☑ Other 3 DAY

QC Requirements (Specify):

1. Relinquished By	Date	Time	1. Received By	Date	Time
Orlando Rico	8/5/14	1515	[illegible]	8/5	1513
2. Relinquished By	**Date**	**Time**	**2. Received By**	**Date**	**Time**
3. Relinquished By	**Date**	**Time**	**3. Received By**	**Date**	**Time**

Comments: obs 4.5 or 5.0 iR4

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-49105-1

Login Number: 49105

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: El Paso - Elementis AOC Monitoring

TestAmerica Job ID: 560-49105-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.140	ug/L	8260B

DUS for the AOC Semiannual Groundwater Sampling Event
October 2014

Data Usability Summary for the Semiannual AOC Groundwater Sampling Event – October 2014

El Paso Merchant Energy-Petroleum Company/Elementis
Corpus Christi, Texas

November 2014

Prepared for:
El Paso Corporation
Houston, Texas

Prepared by:
URS Group, Inc.
9400 Amberglen Boulevard
Austin, Texas 78729

Data Usability Summary for the Semiannual AOC Groundwater Sampling Event – October 2014

This Data Usability Summary (DUS) describes the data quality for groundwater results from samples collected during the October 2014 Administrative Order on Consent (AOC) sampling event at the El Paso Merchant Energy-Petroleum Company (El Paso) Elementis Chromium, L.P. (Elementis) facility in Corpus Christi, Texas. During the sampling event, a total of 18 samples, 2 field duplicates, and 2 trip blanks were collected. The samples were collected from 22 October to 24 October 2014 and analyzed by TestAmerica Laboratories, Inc. (TestAmerica) in Corpus Christi, Texas.

Sample results were compared and evaluated using the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance, Texas Risk Reduction Program 13, May 2010 as guidance. Table 1 is a cross-reference of sample identifications (IDs), dates sampled, and methods used for analyses of groundwater samples. Data validation qualifiers are presented in Appendix A. Table A-1 presents organic analyses results. Copies of the laboratory reports are included in Appendix B.

Table 1. Cross-Reference of Sample and Laboratory Identifications

Sample ID	Laboratory ID	Date Sampled	Benzene SW8260B
AOC-EMWL34T-1014	560-50746-2	10/23/2014	X
AOC-EMWL35B-1014	560-50709-9	10/23/2014	X
AOC-EMWL36T-1014	560-50746-3	10/23/2014	X
AOC-EMWL37T-1014	560-50709-10	10/23/2014	X
AOC-EMWL38T-1014	560-50709-6	10/22/2014	X
AOC-EMWL39T-1014	560-50709-11	10/23/2014	X
AOC-EMWL6T-1014	560-50709-5	10/22/2014	X
AOC-EMWL8T-1014	560-50709-4	10/22/2014	X
AOC-EMWL9T-1014	560-50709-12	10/23/2014	X
AOC-EMWU32T-1014	560-50746-7	10/24/2014	X
AOC-EMWU32T-1014-1	560-50746-8	10/24/2014	X
AOC-EMWU3T-1014	560-50746-4	10/23/2014	X
AOC-EMWU41T-1014-3	560-50709-8	10/22/2014	X
AOC-EMWU6T-1014	560-50746-5	10/23/2014	X
AOC-MWU31-0414	560-50746-9	10/24/2014	X
AOC-MWU36-1014	560-50746-6	10/24/2014	X
AOC-OWL08-1014	560-50709-2	10/22/2014	X
AOC-OWL08-1014-1	560-50709-3	10/22/2014	X
AOC-OWL14R-1014	560-50709-7	10/22/2014	X
AOC-PZ06-1014	560-50746-10	10/24/2014	X
Trip Blanks			
AOC-TB01-1014	560-50709-1	10/22/2014	X
AOC-TB02-1014	560-50746-1	10/23/2014	X

Sample identifications (IDs) ending in -3 are client-specified matrix spike/matrix spike duplicate (MS/MSD) samples.
Sample IDs ending in -1 are field duplicates.
SW - U.S. Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, 1986 and subsequent revisions.

Data Usability Summary

The following information provides a summary of quality control (QC) results applied to the groundwater samples collected during the October 2014 AOC Semiannual Sampling Event. The data evaluation and validation results indicate that the data are acceptable and usable for this round of sampling. Results that were detected between the sample detection limits and method quantitation limits were qualified with "J" as estimated and are not discussed further.

Benzene by EPA Method SW8260B

Eighteen samples, 2 field duplicate samples, and 2 trip blanks were analyzed for benzene by the U.S. Environmental Protection Agency (EPA) Method SW8260B. The QC requirements that were evaluated included sample receipt conditions, holding times, detection limits, calibrations, internal standards, blanks, laboratory control samples, matrix spike/matrix spike duplicate samples, surrogate spikes, and field duplicates. The laboratory-derived acceptance criteria were used to evaluate the data. The QC results indicate that the data are usable for their intended purpose.

Detection Limits

Several samples were diluted due to elevated non-target analyte concentrations. This resulted in elevated detection limits for those samples. No qualifications to the data were made.

APPENDIX A

Sample Results

Flag Definitions

J Estimated: The analyte was detected and positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

ND Not detected, no instrument response was recorded for the analyte.

U Not detected: analysis for the analyte was performed, but the analyte was not detected above the level of the associated value. The associated value is the detection limit. A positive result with a “U” qualifier has been flagged due to blank contamination.

Table A-1

Organic Analysis Results

SITE ID	OffELM_O	OffELM_O	OffELM_O	OffELM_O
LOCATION ID	EMW-L34T	EMW-L35B	EMW-L36T	EMW-L37T
SAMPLE ID	AOC-EMWL34T-1014	AOC-EMWL35B-1014	AOC-EMWL36T-1014	AOC-EMWL37T-1014
DATE SAMPLED	23-OCT-14	23-OCT-14	23-OCT-14	23-OCT-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	399000 (1650)[5000]	21.2 (0.330)[1]	873000 (3300)[10000]	1.17 (0.330)[1]

SITE ID	OffELM_O	OffELM_O	EP	EP
LOCATION ID	EMW-L38T	EMW-L39T	EMW-L41T	EMW-L6T
SAMPLE ID	AOC-EMWL38T-1014	AOC-EMWL39T-1014	AOC-EMWL41T-1014-3	AOC-EMWL6T-1014
DATE SAMPLED	22-OCT-14	23-OCT-14	22-OCT-14	22-OCT-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.330)[1]	2.49 (0.330)[1]	ND U (0.330)[1]	ND U (0.330)[1]

SITE ID	OffELM_O	OffELM_O	OffELM_O	OffELM_O
LOCATION ID	EMW-L8T	EMW-L9T	EMW-U32T	EMW-U32T
SAMPLE ID	AOC-EMWL8T-1014	AOC-EMWL9T-1014	AOC-EMWU32T-1014	AOC-EMWU32T-1014-1 Dup of AOC-EMWU32T-1014
DATE SAMPLED	22-OCT-14	23-OCT-14	24-OCT-14	24-OCT-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.330)[1]	ND U (0.330)[1]	21.5 (0.330)[1]	18.2 (1.65)[5]

	SITE ID											
	LOCATION ID											
	SAMPLE ID											
	DATE SAMPLED											
PARAMETER	OffELM_O EMW-U3T AOC-EMWU3T-1014 23-OCT-14				OffELP_O EMW-U6T AOC-EMWU6T-1014 23-OCT-14				OffELM_O MW-U31 AOC-MWU31-1014 24-OCT-14				OffELM_O MWU36 AOC-MWU36-1014 24-OCT-14			
SW8260B - Volatile Organic Compounds (ug/L)																
Benzene	ND	U	(66.0	)[200]	ND	U	(0.330	)[1]	3400		(16.5	)[50]	ND	U	(0.330	)[1]

SITE ID	OffELM_O	OffELM_O	OffELM_O	OffELM_O
LOCATION ID	OW-L08	OW-L08	OW-L14R	PZ-06
SAMPLE ID	AOC-OWL08-1014	AOC-OWL08-1014-1 Dup of AOC-OWL08-1014	AOC-OWL14R-1014	AOC-PZ06-1014
DATE SAMPLED	22-OCT-14	22-OCT-14	22-OCT-14	24-OCT-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.330)[1]	ND U (0.330)[1]	1.51 (0.330)[1]	86500 (1650)[5000

APPENDIX B

Laboratory Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-50709-1
Client Project/Site: Elementis AOC Groundwater

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
10/27/2014 2:09:39 PM

John Cady, Manager of Project Management
(713)690-4444
john.cady@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50709-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-50709-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

John M Cady	Jon Cady	10/27/2014
Name (printed)	Signature	Date

Manager of Project Management
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	10/27/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-50709-1
Reviewer Name:	John M Cady		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		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" must be included in the laboratory data package submitted 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 Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	10/27/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-50709-1
Reviewer Name:	John M Cady		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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.
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Laboratory Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	10/27/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-50709-1
Reviewer Name:	John M Cady		

ER #[1]	Description

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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.
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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).

TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET

Matrix:	Water
Method:	8260B
Prep Method:	5030B
Date Analyzed:	7/31/2014
Job #:	560-48465-1
TALS Batch:	105236/106095
Units:	ug/L

Analyte	Instrument #	MDL	DCS Spike	Measured Result	MQL
1,1,1,2-Tetrachloroethane	VGCMS#1	0.209	0.300	0.198	1
1,1,1-Trichloroethane	VGCMS#1	0.300	0.300	0.289	1
1,1,2,2-Tetrachloroethane	VGCMS#1	0.190	0.300	0.230	1
1,1,2-Trichloro-1,2,2-trifluoroethane	VGCMS#1	0.350	0.500	0.280	1
1,1,2-Trichloroethane	VGCMS#1	0.173	0.300	0.146	1
1,1-Dichloroethane	VGCMS#1	0.168	0.300	0.218	1
1,1-Dichloroethene	VGCMS#1	0.300	0.300	0.231	1
1,1-Dichloropropene	VGCMS#1	0.185	0.300	0.166	1
1,2,3-Trichlorobenzene	VGCMS#1	0.217	0.300	0.285	5
1,2,3-Trichloropropane	VGCMS#1	0.191	0.500	0.493	1
1,2,4-Trichlorobenzene	VGCMS#1	0.168	0.300	0.261	5
1,2,4-Trimethylbenzene	VGCMS#1	0.200	0.300	0.214	2
1,2-Dibromo-3-Chloropropane	VGCMS#1	0.349	1.000	1.192	5
1,2-Dichlorobenzene	VGCMS#1	0.170	0.300	0.302	1
1,2-Dichloroethane	VGCMS#1	0.172	0.300	0.328	1
1,2-Dichloropropane	VGCMS#1	0.173	0.300	0.176	1
1,3,5-Trichlorobenzene	VGCMS#1	0.203	0.300	0.294	5
1,3,5-Trimethylbenzene	VGCMS#1	0.200	0.300	0.229	2
1,3-Dichlorobenzene	VGCMS#1	0.128	0.300	0.281	1
1,3-Dichloropropane	VGCMS#1	0.146	0.300	0.226	1
1,4-Dichlorobenzene	VGCMS#1	0.200	0.300	0.272	1
1,4-Dioxane	VGCMS#1	7.460	20.000	10.537	100
1-Octene	VGCMS#1	0.440	0.500	0.265	5
2,2-Dichloropropane	VGCMS#1	0.335	1.000	1.124	1
2-Butanone (MEK)	VGCMS#1	1.000	1.000	0.925	10
2-Chloro-1,3-butadiene	VGCMS#1	0.200	0.500	0.279	1
2-Chloroethyl vinyl ether	VGCMS#1	0.191	0.500	0.673	1
2-Chlorotoluene	VGCMS#1	0.155	0.300	0.252	1
2-Hexanone	VGCMS#1	0.500	0.500	0.277	5
2-Nitropropane	VGCMS#1	1.000	2.000	2.966	5
3-Chloro-1-propene	VGCMS#1	0.421	0.500	0.525	1
4-Chlorotoluene	VGCMS#1	0.242	0.300	0.255	1
4-Isopropyltoluene	VGCMS#1	0.150	0.300	0.284	1
4-Methyl-2-pentanone (MIBK)	VGCMS#1	0.176	0.300	0.192	5
Acetone	VGCMS#1	5.000	5.000	4.457	10
Acetonitrile	VGCMS#1	10.000	10.000	10.977	50
Acrolein	VGCMS#1	5.000	10.000	8.991	50
Acrylonitrile	VGCMS#1	1.930	3.000	1.729	10
Benzene	VGCMS#1	0.140	0.300	0.327	1
Benzyl chloride	VGCMS#1	0.278	1.000	1.526	5
Bromobenzene	VGCMS#1	0.128	0.300	0.318	1
Bromoform	VGCMS#1	0.500	0.500	0.522	5
Bromomethane	VGCMS#1	0.392	0.500	0.423	5
Butadiene	VGCMS#1	0.300	0.300	0.251	1
Carbon disulfide	VGCMS#1	0.500	0.500	0.355	5
Carbon tetrachloride	VGCMS#1	0.251	0.500	0.338	1

DCS = Detection Check Standard
MQL = Method Quantitation Limit
MDLV 8260B_VGCMS1_Water_3Q2014

TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET

Matrix:	Water
Method:	8260B
Prep Method:	5030B
Date Analyzed:	7/31/2014
Job #:	560-48465-1
TALS Batch:	105236/106095
Units:	ug/L

Analyte	Instrument #	MDL	DCS Spike	Measured Result	MQL
Chlorobenzene	VGCMS#1	0.136	0.300	0.348	1
Chlorobromomethane	VGCMS#1	0.228	0.500	0.205	1
Chlorodibromomethane	VGCMS#1	0.223	0.300	0.142	1
Chloroethane	VGCMS#1	0.400	1.000	0.892	5
Chloroform	VGCMS#1	0.173	0.300	0.345	1
Chloromethane	VGCMS#1	0.390	0.500	0.383	5
cis-1,2-Dichloroethene	VGCMS#1	0.121	0.300	0.232	1
cis-1,3-Dichloropropene	VGCMS#1	0.146	0.500	0.665	1
Cyclohexane	VGCMS#1	1.000	1.000	0.943	2
Cyclohexanone	VGCMS#1	5.000	5.000	2.056	50
Dibromomethane	VGCMS#1	0.165	0.300	0.283	1
Dichlorobromomethane	VGCMS#1	0.175	0.300	0.224	1
Dichlorodifluoromethane	VGCMS#1	0.429	1.000	0.913	5
Ethyl acetate	VGCMS#1	1.000	4.000	3.489	5
Ethyl ether	VGCMS#1	0.310	0.500	0.530	5
Ethyl methacrylate	VGCMS#1	0.500	1.000	0.656	5
Ethylbenzene	VGCMS#1	0.200	0.300	0.306	1
Ethylene Dibromide	VGCMS#1	0.175	0.300	0.194	1
Ethylene oxide	VGCMS#1	9.200	20.000	20.102	20
Hexachlorobutadiene	VGCMS#1	0.860	1.000	0.916	5
Hexane	VGCMS#1	2.000	2.000	0.166	5
Iodomethane	VGCMS#1	0.223	0.500	0.304	2
Isobutyl alcohol	VGCMS#1	5.000	7.500	14.049	50
Isooctane	VGCMS#1	0.500	0.500	0.423	5
Isopropylbenzene	VGCMS#1	0.200	0.300	0.293	5
Methacrylonitrile	VGCMS#1	2.000	3.000	2.683	5
Methyl acetate	VGCMS#1	0.530	1.500	2.943	5
Methyl methacrylate	VGCMS#1	0.200	0.600	0.286	5
Methyl tert-butyl ether	VGCMS#1	0.200	0.300	0.285	1
Methylene Chloride	VGCMS#1	2.000	2.000	2.034	5
m-Xylene & p-Xylene	VGCMS#1	0.260	0.300	0.292	2
Naphthalene	VGCMS#1	0.200	0.300	0.187	5
n-Butylbenzene	VGCMS#1	0.200	0.300	0.236	1
n-Heptane	VGCMS#1	0.300	1.000	1.042	5
N-Propylbenzene	VGCMS#1	0.106	0.300	0.274	1
o-Xylene	VGCMS#1	0.200	0.300	0.270	1
Pentachloroethane	VGCMS#1	0.302	1.000	0.503	5
Propionitrile	VGCMS#1	2.690	10.000	12.614	10
sec-Butylbenzene	VGCMS#1	0.300	0.300	0.290	2
Styrene	VGCMS#1	0.200	0.300	0.239	1
tert-Butylbenzene	VGCMS#1	0.200	0.300	0.276	2
Tetrachloroethene	VGCMS#1	0.189	0.300	0.371	1
Toluene	VGCMS#1	0.300	0.300	0.303	1
trans-1,2-Dichloroethene	VGCMS#1	0.200	0.500	0.341	1
trans-1,3-Dichloropropene	VGCMS#1	0.200	0.500	0.729	5
trans-1,4-Dichloro-2-butene	VGCMS#1	0.500	2.000	1.407	5

DCS = Detection Check Standard
MQL = Method Quantitation Limit
MDLV 8260B_VGCMS1_Water_3Q2014

TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET

Matrix:	Water
Method:	8260B
Prep Method:	5030B
Date Analyzed:	7/31/2014
Job #:	560-48465-1
TALS Batch:	105236/106095
Units:	ug/L

Analyte	Instrument #	MDL	DCS Spike	Measured Result	MQL
Trichloroethene	VGCMS#1	0.317	0.500	0.363	1
Trichlorofluoromethane	VGCMS#1	0.244	0.500	0.209	1
Vinyl acetate	VGCMS#1	0.500	2.000	2.511	5
Vinyl chloride	VGCMS#1	0.300	0.500	0.444	1
Xylenes, Total	VGCMS#1	0.226	0.600	0.562	2

DCS = Detection Check Standard
MQL = Method Quantitation Limit
MDLV 8260B_VGCMS1_Water_3Q2014

Job ID: 560-50709-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-50709-1

Comments
No additional comments.

Receipt
The samples were received on 10/23/2014 1:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50709-1

Client Sample ID: AOC-TB-01-1014 — Lab Sample ID: 560-50709-1

No Detections.

Client Sample ID: AOC-OWL08-1014 — Lab Sample ID: 560-50709-2

No Detections.

Client Sample ID: AOC-OWL08-1014-1 — Lab Sample ID: 560-50709-3

No Detections.

Client Sample ID: AOC-EMWL8T-1014 — Lab Sample ID: 560-50709-4

No Detections.

Client Sample ID: AOC-EMWL6T-1014 — Lab Sample ID: 560-50709-5

No Detections.

Client Sample ID: AOC-EMWL38T-1014 — Lab Sample ID: 560-50709-6

No Detections.

Client Sample ID: AOC-OWL14R-1014 — Lab Sample ID: 560-50709-7

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.51		1.00	0.330	ug/L	1		8260B	Total/NA

Client Sample ID: AOC-EMWL41T-1014-3 — Lab Sample ID: 560-50709-8

No Detections.

Client Sample ID: AOC-EMWL35B-1014 — Lab Sample ID: 560-50709-9

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	21.2		1.00	0.330	ug/L	1		8260B	Total/NA

Client Sample ID: AOC-EMWL37T-1014 — Lab Sample ID: 560-50709-10

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.17		1.00	0.330	ug/L	1		8260B	Total/NA

Client Sample ID: AOC-EMWL39T-1014 — Lab Sample ID: 560-50709-11

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	2.49		1.00	0.330	ug/L	1		8260B	Total/NA

Client Sample ID: AOC-EMWL9T-1014 — Lab Sample ID: 560-50709-12

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50709-1

Client Sample ID: AOC-TB-01-1014

Lab Sample ID: 560-50709-1
Date Collected: 10/22/14 08:00
Matrix: Water
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/24/14 13:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*10/24/14 13:24*	*1*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*		*10/24/14 13:24*	*1*
Dibromofluoromethane (Surr)	*95*		*69 - 130*		*10/24/14 13:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*10/24/14 13:24*	*1*

Client Sample ID: AOC-OWL08-1014

Lab Sample ID: 560-50709-2
Date Collected: 10/22/14 09:30
Matrix: Water
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/24/14 13:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*10/24/14 13:49*	*1*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*10/24/14 13:49*	*1*
Dibromofluoromethane (Surr)	*101*		*69 - 130*		*10/24/14 13:49*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*10/24/14 13:49*	*1*

Client Sample ID: AOC-OWL08-1014-1

Lab Sample ID: 560-50709-3
Date Collected: 10/22/14 09:30
Matrix: Water
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/24/14 14:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*10/24/14 14:14*	*1*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*		*10/24/14 14:14*	*1*
Dibromofluoromethane (Surr)	*100*		*69 - 130*		*10/24/14 14:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*10/24/14 14:14*	*1*

Client Sample ID: AOC-EMWL8T-1014

Lab Sample ID: 560-50709-4
Date Collected: 10/22/14 11:30
Matrix: Water
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/24/14 14:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*10/24/14 14:39*	*1*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*		*10/24/14 14:39*	*1*
Dibromofluoromethane (Surr)	*98*		*69 - 130*		*10/24/14 14:39*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*		*10/24/14 14:39*	*1*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50709-1

Client Sample ID: AOC-EMWL6T-1014

Lab Sample ID: 560-50709-5
Date Collected: 10/22/14 13:25
Matrix: Water
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/24/14 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*10/24/14 15:04*	*1*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*10/24/14 15:04*	*1*
Dibromofluoromethane (Surr)	*107*		*69 - 130*		*10/24/14 15:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*		*10/24/14 15:04*	*1*

Client Sample ID: AOC-EMWL38T-1014

Lab Sample ID: 560-50709-6
Date Collected: 10/22/14 14:30
Matrix: Water
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/24/14 15:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*10/24/14 15:29*	*1*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*10/24/14 15:29*	*1*
Dibromofluoromethane (Surr)	*102*		*69 - 130*		*10/24/14 15:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 140*		*10/24/14 15:29*	*1*

Client Sample ID: AOC-OWL14R-1014

Lab Sample ID: 560-50709-7
Date Collected: 10/22/14 17:25
Matrix: Water
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**1.51**		1.00	0.330	ug/L			10/24/14 15:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*10/24/14 15:54*	*1*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*		*10/24/14 15:54*	*1*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*10/24/14 15:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*10/24/14 15:54*	*1*

Client Sample ID: AOC-EMWL41T-1014-3

Lab Sample ID: 560-50709-8
Date Collected: 10/22/14 15:45
Matrix: Water
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/24/14 12:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*10/24/14 12:59*	*1*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*10/24/14 12:59*	*1*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*10/24/14 12:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*		*10/24/14 12:59*	*1*

Client Sample ID: AOC-EMWL35B-1014 — Lab Sample ID: 560-50709-9

Date Collected: 10/23/14 10:45 — **Matrix: Water**
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	21.2		1.00	0.330	ug/L			10/24/14 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*10/24/14 16:18*	*1*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*10/24/14 16:18*	*1*
Dibromofluoromethane (Surr)	*102*		*69 - 130*		*10/24/14 16:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*10/24/14 16:18*	*1*

Client Sample ID: AOC-EMWL37T-1014 — Lab Sample ID: 560-50709-10

Date Collected: 10/23/14 09:25 — **Matrix: Water**
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.17		1.00	0.330	ug/L			10/24/14 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*10/24/14 16:43*	*1*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*10/24/14 16:43*	*1*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*10/24/14 16:43*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*		*10/24/14 16:43*	*1*

Client Sample ID: AOC-EMWL39T-1014 — Lab Sample ID: 560-50709-11

Date Collected: 10/23/14 09:25 — **Matrix: Water**
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.49		1.00	0.330	ug/L			10/24/14 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*10/24/14 17:08*	*1*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*		*10/24/14 17:08*	*1*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*10/24/14 17:08*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*		*10/24/14 17:08*	*1*

Client Sample ID: AOC-EMWL9T-1014 — Lab Sample ID: 560-50709-12

Date Collected: 10/23/14 12:15 — **Matrix: Water**
Date Received: 10/23/14 13:25

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/24/14 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*70 - 130*		*10/24/14 17:33*	*1*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*10/24/14 17:33*	*1*
Dibromofluoromethane (Surr)	*102*		*69 - 130*		*10/24/14 17:33*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*		*10/24/14 17:33*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 560-108641/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108641

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/24/14 12:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*10/24/14 12:34*	*1*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*		*10/24/14 12:34*	*1*
Dibromofluoromethane (Surr)	*100*		*69 - 130*		*10/24/14 12:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*10/24/14 12:34*	*1*

Lab Sample ID: LCS 560-108641/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108641

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	23.87		ug/L		95	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*

Lab Sample ID: 560-50709-8 MS — **Client Sample ID: AOC-EMWL41T-1014-3**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108641

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.330	U	25.0	24.10		ug/L		96	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*

Lab Sample ID: 560-50709-8 MSD — **Client Sample ID: AOC-EMWL41T-1014-3**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108641

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.330	U	25.0	24.09		ug/L		96	70 - 130	0	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*

QC Association Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50709-1

GC/MS VOA

Analysis Batch: 108641

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-50709-1	AOC-TB-01-1014	Total/NA	Water	8260B	
560-50709-2	AOC-OWL08-1014	Total/NA	Water	8260B	
560-50709-3	AOC-OWL08-1014-1	Total/NA	Water	8260B	
560-50709-4	AOC-EMWL8T-1014	Total/NA	Water	8260B	
560-50709-5	AOC-EMWL6T-1014	Total/NA	Water	8260B	
560-50709-6	AOC-EMWL38T-1014	Total/NA	Water	8260B	
560-50709-7	AOC-OWL14R-1014	Total/NA	Water	8260B	
560-50709-8	AOC-EMWL41T-1014-3	Total/NA	Water	8260B	
560-50709-8 MS	AOC-EMWL41T-1014-3	Total/NA	Water	8260B	
560-50709-8 MSD	AOC-EMWL41T-1014-3	Total/NA	Water	8260B	
560-50709-9	AOC-EMWL35B-1014	Total/NA	Water	8260B	
560-50709-10	AOC-EMWL37T-1014	Total/NA	Water	8260B	
560-50709-11	AOC-EMWL39T-1014	Total/NA	Water	8260B	
560-50709-12	AOC-EMWL9T-1014	Total/NA	Water	8260B	
LCS 560-108641/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-108641/8	Method Blank	Total/NA	Water	8260B	

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50709-1

Client Sample ID: AOC-TB-01-1014 — Lab Sample ID: 560-50709-1

Date Collected: 10/22/14 08:00 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 13:24	RP56	TAL CC

Client Sample ID: AOC-OWL08-1014 — Lab Sample ID: 560-50709-2

Date Collected: 10/22/14 09:30 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 13:49	RP56	TAL CC

Client Sample ID: AOC-OWL08-1014-1 — Lab Sample ID: 560-50709-3

Date Collected: 10/22/14 09:30 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 14:14	RP56	TAL CC

Client Sample ID: AOC-EMWL8T-1014 — Lab Sample ID: 560-50709-4

Date Collected: 10/22/14 11:30 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 14:39	RP56	TAL CC

Client Sample ID: AOC-EMWL6T-1014 — Lab Sample ID: 560-50709-5

Date Collected: 10/22/14 13:25 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 15:04	RP56	TAL CC

Client Sample ID: AOC-EMWL38T-1014 — Lab Sample ID: 560-50709-6

Date Collected: 10/22/14 14:30 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 15:29	RP56	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50709-1

Client Sample ID: AOC-OWL14R-1014 — Lab Sample ID: 560-50709-7

Date Collected: 10/22/14 17:25 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 15:54	RP56	TAL CC

Client Sample ID: AOC-EMWL41T-1014-3 — Lab Sample ID: 560-50709-8

Date Collected: 10/22/14 15:45 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 12:59	RP56	TAL CC

Client Sample ID: AOC-EMWL35B-1014 — Lab Sample ID: 560-50709-9

Date Collected: 10/23/14 10:45 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 16:18	RP56	TAL CC

Client Sample ID: AOC-EMWL37T-1014 — Lab Sample ID: 560-50709-10

Date Collected: 10/23/14 09:25 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 16:43	RP56	TAL CC

Client Sample ID: AOC-EMWL39T-1014 — Lab Sample ID: 560-50709-11

Date Collected: 10/23/14 09:25 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 17:08	RP56	TAL CC

Client Sample ID: AOC-EMWL9T-1014 — Lab Sample ID: 560-50709-12

Date Collected: 10/23/14 12:15 — **Matrix: Water**
Date Received: 10/23/14 13:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108641	10/24/14 17:33	RP56	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Certification Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50709-1

Laboratory: TestAmerica Corpus Christi

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

Method Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50709-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Sample Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50709-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-50709-1	AOC-TB-01-1014	Water	10/22/14 08:00	10/23/14 13:25
560-50709-2	AOC-OWL08-1014	Water	10/22/14 09:30	10/23/14 13:25
560-50709-3	AOC-OWL08-1014-1	Water	10/22/14 09:30	10/23/14 13:25
560-50709-4	AOC-EMWL8T-1014	Water	10/22/14 11:30	10/23/14 13:25
560-50709-5	AOC-EMWL6T-1014	Water	10/22/14 13:25	10/23/14 13:25
560-50709-6	AOC-EMWL38T-1014	Water	10/22/14 14:30	10/23/14 13:25
560-50709-7	AOC-OWL14R-1014	Water	10/22/14 17:25	10/23/14 13:25
560-50709-8	AOC-EMWL41T-1014-3	Water	10/22/14 15:45	10/23/14 13:25
560-50709-9	AOC-EMWL35B-1014	Water	10/23/14 10:45	10/23/14 13:25
560-50709-10	AOC-EMWL37T-1014	Water	10/23/14 09:25	10/23/14 13:25
560-50709-11	AOC-EMWL39T-1014	Water	10/23/14 09:25	10/23/14 13:25
560-50709-12	AOC-EMWL9T-1014	Water	10/23/14 12:15	10/23/14 13:25

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler:	Lab PM: Cady, John M	Carrier Tracking No(s):	COC No: 560-15198-862.1
Client Contact: David Zuvanich	Phone:	E-Mail: john.cady@testamericainc.com		Page: Page 1
Company: El Paso Energy Corporation				Job #: Loc: 560 50709
Address: 1001 Louisiana Street Room S1905B	Due Date Requested:			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: WD# 208570			
Project Name: Elementis AOC Groundwater	Project #: 56000079			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Ac
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)

Other:

Special Instructions/Note: 4.2°C IR-4 (TM)

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - Benzene	8260B -	Total Number of containers
				Preservation Code:			N	N	
[illegible]	[illegible]	[illegible]		Water					[illegible]
[illegible]				Water					
[illegible]				Water					
[illegible]				Water					
[illegible]				Water					
[illegible]				Water					
[illegible]				Water					
[illegible]				Water					
[illegible]				Water					
[illegible]				Water					
[illegible]				Water					

560-50709 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [illegible]	Date/Time: [illegible] 1325	Company	Received by: [illegible]	Date/Time: 10/23/14 1325	Company TA-CC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-50709-1

Login Number: 50709

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50709-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.330	ug/L	8260B

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Tel: (361)289-2673

TestAmerica Job ID: 560-50746-1
Client Project/Site: Elementis AOC Groundwater

For:
URS Corporation
PO BOX 201088
Austin, Texas 78720-1088

Attn: Ms. Jean Youngerman

Authorized for release by:
10/30/2014 12:39:36 PM

John Cady, Manager of Project Management
(713)690-4444
john.cady@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50746-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
U	Analyte was not detected at or above the SDL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for TestAmerica Corpus Christi job number 560-50746-1 and consists of:

- ☑ 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 each "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 all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

John M Cady	Johnny Cady	10/30/2014
Name (printed)	Signature	Date

Manager of Project Management
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	10/30/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-50746-1
Reviewer Name:	John M Cady		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			R7C
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		X			R10B
		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" must be included in the laboratory data package submitted 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 Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	10/30/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-50746-1
Reviewer Name:	John M Cady		

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?			X		
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted 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.
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Laboratory Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	10/30/2014
Project Name:	Elementis AOC Groundwater	Laboratory Job Number:	560-50746-1
Reviewer Name:	John M Cady		

ER #[1]	Description
R7C	Method 8260B: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
R10B	Method 8260B: The following sample was diluted due to the abundance of a non-target analyte: 50746-4. Elevated reporting limits (RLs) are provided.8260B#108730

1. Items identified by the letter “R” must be included in the laboratory data package submitted 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).

TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET

Matrix:	Water
Method:	8260B
Prep Method:	5030B
Date Analyzed:	7/31/2014
Job #:	560-48465-1
TALS Batch:	105236/106095
Units:	ug/L

Analyte	Instrument #	MDL	DCS Spike	Measured Result	MQL
1,1,1,2-Tetrachloroethane	VGCMS#1	0.209	0.300	0.198	1
1,1,1-Trichloroethane	VGCMS#1	0.300	0.300	0.289	1
1,1,2,2-Tetrachloroethane	VGCMS#1	0.190	0.300	0.230	1
1,1,2-Trichloro-1,2,2-trifluoroethane	VGCMS#1	0.350	0.500	0.280	1
1,1,2-Trichloroethane	VGCMS#1	0.173	0.300	0.146	1
1,1-Dichloroethane	VGCMS#1	0.168	0.300	0.218	1
1,1-Dichloroethene	VGCMS#1	0.300	0.300	0.231	1
1,1-Dichloropropene	VGCMS#1	0.185	0.300	0.166	1
1,2,3-Trichlorobenzene	VGCMS#1	0.217	0.300	0.285	5
1,2,3-Trichloropropane	VGCMS#1	0.191	0.500	0.493	1
1,2,4-Trichlorobenzene	VGCMS#1	0.168	0.300	0.261	5
1,2,4-Trimethylbenzene	VGCMS#1	0.200	0.300	0.214	2
1,2-Dibromo-3-Chloropropane	VGCMS#1	0.349	1.000	1.192	5
1,2-Dichlorobenzene	VGCMS#1	0.170	0.300	0.302	1
1,2-Dichloroethane	VGCMS#1	0.172	0.300	0.328	1
1,2-Dichloropropane	VGCMS#1	0.173	0.300	0.176	1
1,3,5-Trichlorobenzene	VGCMS#1	0.203	0.300	0.294	5
1,3,5-Trimethylbenzene	VGCMS#1	0.200	0.300	0.229	2
1,3-Dichlorobenzene	VGCMS#1	0.128	0.300	0.281	1
1,3-Dichloropropane	VGCMS#1	0.146	0.300	0.226	1
1,4-Dichlorobenzene	VGCMS#1	0.200	0.300	0.272	1
1,4-Dioxane	VGCMS#1	7.460	20.000	10.537	100
1-Octene	VGCMS#1	0.440	0.500	0.265	5
2,2-Dichloropropane	VGCMS#1	0.335	1.000	1.124	1
2-Butanone (MEK)	VGCMS#1	1.000	1.000	0.925	10
2-Chloro-1,3-butadiene	VGCMS#1	0.200	0.500	0.279	1
2-Chloroethyl vinyl ether	VGCMS#1	0.191	0.500	0.673	1
2-Chlorotoluene	VGCMS#1	0.155	0.300	0.252	1
2-Hexanone	VGCMS#1	0.500	0.500	0.277	5
2-Nitropropane	VGCMS#1	1.000	2.000	2.966	5
3-Chloro-1-propene	VGCMS#1	0.421	0.500	0.525	1
4-Chlorotoluene	VGCMS#1	0.242	0.300	0.255	1
4-Isopropyltoluene	VGCMS#1	0.150	0.300	0.284	1
4-Methyl-2-pentanone (MIBK)	VGCMS#1	0.176	0.300	0.192	5
Acetone	VGCMS#1	5.000	5.000	4.457	10
Acetonitrile	VGCMS#1	10.000	10.000	10.977	50
Acrolein	VGCMS#1	5.000	10.000	8.991	50
Acrylonitrile	VGCMS#1	1.930	3.000	1.729	10
Benzene	VGCMS#1	0.140	0.300	0.327	1
Benzyl chloride	VGCMS#1	0.278	1.000	1.526	5
Bromobenzene	VGCMS#1	0.128	0.300	0.318	1
Bromoform	VGCMS#1	0.500	0.500	0.522	5
Bromomethane	VGCMS#1	0.392	0.500	0.423	5
Butadiene	VGCMS#1	0.300	0.300	0.251	1
Carbon disulfide	VGCMS#1	0.500	0.500	0.355	5
Carbon tetrachloride	VGCMS#1	0.251	0.500	0.338	1

DCS = Detection Check Standard
MQL = Method Quantitation Limit
MDLV 8260B_VGCMS1_Water_3Q2014

TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET

Matrix:	Water
Method:	8260B
Prep Method:	5030B
Date Analyzed:	7/31/2014
Job #:	560-48465-1
TALS Batch:	105236/106095
Units:	ug/L

Analyte	Instrument #	MDL	DCS Spike	Measured Result	MQL
Chlorobenzene	VGCMS#1	0.136	0.300	0.348	1
Chlorobromomethane	VGCMS#1	0.228	0.500	0.205	1
Chlorodibromomethane	VGCMS#1	0.223	0.300	0.142	1
Chloroethane	VGCMS#1	0.400	1.000	0.892	5
Chloroform	VGCMS#1	0.173	0.300	0.345	1
Chloromethane	VGCMS#1	0.390	0.500	0.383	5
cis-1,2-Dichloroethene	VGCMS#1	0.121	0.300	0.232	1
cis-1,3-Dichloropropene	VGCMS#1	0.146	0.500	0.665	1
Cyclohexane	VGCMS#1	1.000	1.000	0.943	2
Cyclohexanone	VGCMS#1	5.000	5.000	2.056	50
Dibromomethane	VGCMS#1	0.165	0.300	0.283	1
Dichlorobromomethane	VGCMS#1	0.175	0.300	0.224	1
Dichlorodifluoromethane	VGCMS#1	0.429	1.000	0.913	5
Ethyl acetate	VGCMS#1	1.000	4.000	3.489	5
Ethyl ether	VGCMS#1	0.310	0.500	0.530	5
Ethyl methacrylate	VGCMS#1	0.500	1.000	0.656	5
Ethylbenzene	VGCMS#1	0.200	0.300	0.306	1
Ethylene Dibromide	VGCMS#1	0.175	0.300	0.194	1
Ethylene oxide	VGCMS#1	9.200	20.000	20.102	20
Hexachlorobutadiene	VGCMS#1	0.860	1.000	0.916	5
Hexane	VGCMS#1	2.000	2.000	0.166	5
Iodomethane	VGCMS#1	0.223	0.500	0.304	2
Isobutyl alcohol	VGCMS#1	5.000	7.500	14.049	50
Isooctane	VGCMS#1	0.500	0.500	0.423	5
Isopropylbenzene	VGCMS#1	0.200	0.300	0.293	5
Methacrylonitrile	VGCMS#1	2.000	3.000	2.683	5
Methyl acetate	VGCMS#1	0.530	1.500	2.943	5
Methyl methacrylate	VGCMS#1	0.200	0.600	0.286	5
Methyl tert-butyl ether	VGCMS#1	0.200	0.300	0.285	1
Methylene Chloride	VGCMS#1	2.000	2.000	2.034	5
m-Xylene & p-Xylene	VGCMS#1	0.260	0.300	0.292	2
Naphthalene	VGCMS#1	0.200	0.300	0.187	5
n-Butylbenzene	VGCMS#1	0.200	0.300	0.236	1
n-Heptane	VGCMS#1	0.300	1.000	1.042	5
N-Propylbenzene	VGCMS#1	0.106	0.300	0.274	1
o-Xylene	VGCMS#1	0.200	0.300	0.270	1
Pentachloroethane	VGCMS#1	0.302	1.000	0.503	5
Propionitrile	VGCMS#1	2.690	10.000	12.614	10
sec-Butylbenzene	VGCMS#1	0.300	0.300	0.290	2
Styrene	VGCMS#1	0.200	0.300	0.239	1
tert-Butylbenzene	VGCMS#1	0.200	0.300	0.276	2
Tetrachloroethene	VGCMS#1	0.189	0.300	0.371	1
Toluene	VGCMS#1	0.300	0.300	0.303	1
trans-1,2-Dichloroethene	VGCMS#1	0.200	0.500	0.341	1
trans-1,3-Dichloropropene	VGCMS#1	0.200	0.500	0.729	5
trans-1,4-Dichloro-2-butene	VGCMS#1	0.500	2.000	1.407	5

DCS = Detection Check Standard
MQL = Method Quantitation Limit
MDLV 8260B_VGCMS1_Water_3Q2014

TestAmerica - Corpus Christi
TRRP DCS EVALUATION SPREADSHEET

Matrix:	Water
Method:	8260B
Prep Method:	5030B
Date Analyzed:	7/31/2014
Job #:	560-48465-1
TALS Batch:	105236/106095
Units:	ug/L

Analyte	Instrument #	MDL	DCS Spike	Measured Result	MQL
Trichloroethene	VGCMS#1	0.317	0.500	0.363	1
Trichlorofluoromethane	VGCMS#1	0.244	0.500	0.209	1
Vinyl acetate	VGCMS#1	0.500	2.000	2.511	5
Vinyl chloride	VGCMS#1	0.300	0.500	0.444	1
Xylenes, Total	VGCMS#1	0.226	0.600	0.562	2

DCS = Detection Check Standard
MQL = Method Quantitation Limit
MDLV 8260B_VGCMS1_Water_3Q2014

Job ID: 560-50746-1

Laboratory: TestAmerica Corpus Christi

Narrative

Job Narrative
560-50746-1

Comments
No additional comments.

Receipt
The samples were received on 10/24/2014 1:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0º C.

Detection Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50746-1

Client Sample ID: AOC-TB02-1014 — Lab Sample ID: 560-50746-1

No Detections.

Client Sample ID: AOC-EMWL34T-1014 — Lab Sample ID: 560-50746-2

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	399000		5000	1650	ug/L	5000		8260B	Total/NA

Client Sample ID: AOC-EMWL36T-1014 — Lab Sample ID: 560-50746-3

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	873000		10000	3300	ug/L	10000		8260B	Total/NA

Client Sample ID: AOC-EMWU3T-1014 — Lab Sample ID: 560-50746-4

No Detections.

Client Sample ID: AOC-EMWU6T-1014 — Lab Sample ID: 560-50746-5

No Detections.

Client Sample ID: AOC-MWU36-1014 — Lab Sample ID: 560-50746-6

No Detections.

Client Sample ID: AOC-EMWU32T-1014 — Lab Sample ID: 560-50746-7

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	21.5		1.00	0.330	ug/L	1		8260B	Total/NA

Client Sample ID: AOC-EMWU32T-1014-1 — Lab Sample ID: 560-50746-8

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	18.2		5.00	1.65	ug/L	5		8260B	Total/NA

Client Sample ID: AOC-MWU31-1014 — Lab Sample ID: 560-50746-9

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	3400		50.0	16.5	ug/L	50		8260B	Total/NA

Client Sample ID: AOC-PZ06-1014 — Lab Sample ID: 560-50746-10

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	86500		5000	1650	ug/L	5000		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50746-1

Client Sample ID: AOC-TB02-1014

Lab Sample ID: 560-50746-1
Date Collected: 10/23/14 14:00
Matrix: Water
Date Received: 10/24/14 13:37

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/28/14 12:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*10/28/14 12:42*	*1*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*		*10/28/14 12:42*	*1*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*10/28/14 12:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 140*		*10/28/14 12:42*	*1*

Client Sample ID: AOC-EMWL34T-1014

Lab Sample ID: 560-50746-2
Date Collected: 10/23/14 14:50
Matrix: Water
Date Received: 10/24/14 13:37

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**399000**		5000	1650	ug/L			10/28/14 13:08	5000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*10/28/14 13:08*	*5000*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*		*10/28/14 13:08*	*5000*
Dibromofluoromethane (Surr)	*97*		*69 - 130*		*10/28/14 13:08*	*5000*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 140*		*10/28/14 13:08*	*5000*

Client Sample ID: AOC-EMWL36T-1014

Lab Sample ID: 560-50746-3
Date Collected: 10/23/14 15:55
Matrix: Water
Date Received: 10/24/14 13:37

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**873000**		10000	3300	ug/L			10/28/14 13:33	10000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*10/28/14 13:33*	*10000*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*		*10/28/14 13:33*	*10000*
Dibromofluoromethane (Surr)	*96*		*69 - 130*		*10/28/14 13:33*	*10000*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 140*		*10/28/14 13:33*	*10000*

Client Sample ID: AOC-EMWU3T-1014

Lab Sample ID: 560-50746-4
Date Collected: 10/23/14 17:50
Matrix: Water
Date Received: 10/24/14 13:37

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	66.0	U	200	66.0	ug/L			10/28/14 16:03	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*10/28/14 16:03*	*200*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*		*10/28/14 16:03*	*200*
Dibromofluoromethane (Surr)	*100*		*69 - 130*		*10/28/14 16:03*	*200*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 140*		*10/28/14 16:03*	*200*

Client Sample ID: AOC-EMWU6T-1014 — Lab Sample ID: 560-50746-5

Date Collected: 10/23/14 17:05 — **Matrix: Water**
Date Received: 10/24/14 13:37

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/28/14 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*10/28/14 16:29*	*1*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*		*10/28/14 16:29*	*1*
Dibromofluoromethane (Surr)	*100*		*69 - 130*		*10/28/14 16:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*		*10/28/14 16:29*	*1*

Client Sample ID: AOC-MWU36-1014 — Lab Sample ID: 560-50746-6

Date Collected: 10/24/14 08:25 — **Matrix: Water**
Date Received: 10/24/14 13:37

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/29/14 11:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*70 - 130*		*10/29/14 11:03*	*1*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*		*10/29/14 11:03*	*1*
Dibromofluoromethane (Surr)	*101*		*69 - 130*		*10/29/14 11:03*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*10/29/14 11:03*	*1*

Client Sample ID: AOC-EMWU32T-1014 — Lab Sample ID: 560-50746-7

Date Collected: 10/24/14 09:55 — **Matrix: Water**
Date Received: 10/24/14 13:37

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**21.5**		1.00	0.330	ug/L			10/29/14 11:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*70 - 130*		*10/29/14 11:28*	*1*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*		*10/29/14 11:28*	*1*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*10/29/14 11:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 140*		*10/29/14 11:28*	*1*

Client Sample ID: AOC-EMWU32T-1014-1 — Lab Sample ID: 560-50746-8

Date Collected: 10/24/14 09:55 — **Matrix: Water**
Date Received: 10/24/14 13:37

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**18.2**		5.00	1.65	ug/L			10/28/14 14:48	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*70 - 130*		*10/28/14 14:48*	*5*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*		*10/28/14 14:48*	*5*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*10/28/14 14:48*	*5*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 140*		*10/28/14 14:48*	*5*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50746-1

Client Sample ID: AOC-MWU31-1014

Lab Sample ID: 560-50746-9

Date Collected: 10/24/14 11:00
Matrix: Water
Date Received: 10/24/14 13:37

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	3400		50.0	16.5	ug/L			10/28/14 15:13	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*10/28/14 15:13*	*50*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*		*10/28/14 15:13*	*50*
Dibromofluoromethane (Surr)	*97*		*69 - 130*		*10/28/14 15:13*	*50*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 140*		*10/28/14 15:13*	*50*

Client Sample ID: AOC-PZ06-1014

Lab Sample ID: 560-50746-10

Date Collected: 10/24/14 11:40
Matrix: Water
Date Received: 10/24/14 13:37

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	86500		5000	1650	ug/L			10/28/14 15:38	5000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*10/28/14 15:38*	*5000*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*		*10/28/14 15:38*	*5000*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*10/28/14 15:38*	*5000*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 140*		*10/28/14 15:38*	*5000*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 560-108730/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108730

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/28/14 10:11	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*10/28/14 10:11*	*1*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*		*10/28/14 10:11*	*1*
Dibromofluoromethane (Surr)	*96*		*69 - 130*		*10/28/14 10:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 140*		*10/28/14 10:11*	*1*

Lab Sample ID: LCS 560-108730/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108730

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	26.67		ug/L		107	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
Dibromofluoromethane (Surr)	*101*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 140*

Lab Sample ID: 560-50716-B-5 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108730

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	12300		2500	13500	4	ug/L		48	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 140*

Lab Sample ID: 560-50716-B-5 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108730

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	12300		2500	13720	4	ug/L		57	70 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*70 - 130*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 140*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 560-108802/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108802

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.330	U	1.00	0.330	ug/L			10/29/14 10:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*10/29/14 10:12*	*1*
4-Bromofluorobenzene (Surr)	*106*		*70 - 130*		*10/29/14 10:12*	*1*
Dibromofluoromethane (Surr)	*99*		*69 - 130*		*10/29/14 10:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 140*		*10/29/14 10:12*	*1*

Lab Sample ID: LCS 560-108802/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108802

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	24.05		ug/L		96	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*104*		*70 - 130*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 140*

Lab Sample ID: 560-50716-A-7 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108802

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	815		250	1007		ug/L		77	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*95*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 140*

Lab Sample ID: 560-50716-A-7 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 108802

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	815		250	1051		ug/L		94	70 - 130	4	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*70 - 130*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
Dibromofluoromethane (Surr)	*97*		*69 - 130*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 140*

QC Association Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50746-1

GC/MS VOA

Analysis Batch: 108730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-50716-B-5 MS	Matrix Spike	Total/NA	Water	8260B	
560-50716-B-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
560-50746-1	AOC-TB02-1014	Total/NA	Water	8260B	
560-50746-2	AOC-EMWL34T-1014	Total/NA	Water	8260B	
560-50746-3	AOC-EMWL36T-1014	Total/NA	Water	8260B	
560-50746-4	AOC-EMWU3T-1014	Total/NA	Water	8260B	
560-50746-5	AOC-EMWU6T-1014	Total/NA	Water	8260B	
560-50746-8	AOC-EMWU32T-1014-1	Total/NA	Water	8260B	
560-50746-9	AOC-MWU31-1014	Total/NA	Water	8260B	
560-50746-10	AOC-PZ06-1014	Total/NA	Water	8260B	
LCS 560-108730/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-108730/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 108802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-50716-A-7 MS	Matrix Spike	Total/NA	Water	8260B	
560-50716-A-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
560-50746-6	AOC-MWU36-1014	Total/NA	Water	8260B	
560-50746-7	AOC-EMWU32T-1014	Total/NA	Water	8260B	
LCS 560-108802/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-108802/8	Method Blank	Total/NA	Water	8260B	

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50746-1

Client Sample ID: AOC-TB02-1014 — Lab Sample ID: 560-50746-1

Date Collected: 10/23/14 14:00 — **Matrix: Water**
Date Received: 10/24/14 13:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108730	10/28/14 12:42	RP56	TAL CC

Client Sample ID: AOC-EMWL34T-1014 — Lab Sample ID: 560-50746-2

Date Collected: 10/23/14 14:50 — **Matrix: Water**
Date Received: 10/24/14 13:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5000	108730	10/28/14 13:08	RP56	TAL CC

Client Sample ID: AOC-EMWL36T-1014 — Lab Sample ID: 560-50746-3

Date Collected: 10/23/14 15:55 — **Matrix: Water**
Date Received: 10/24/14 13:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10000	108730	10/28/14 13:33	RP56	TAL CC

Client Sample ID: AOC-EMWU3T-1014 — Lab Sample ID: 560-50746-4

Date Collected: 10/23/14 17:50 — **Matrix: Water**
Date Received: 10/24/14 13:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		200	108730	10/28/14 16:03	RP56	TAL CC

Client Sample ID: AOC-EMWU6T-1014 — Lab Sample ID: 560-50746-5

Date Collected: 10/23/14 17:05 — **Matrix: Water**
Date Received: 10/24/14 13:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108730	10/28/14 16:29	RP56	TAL CC

Client Sample ID: AOC-MWU36-1014 — Lab Sample ID: 560-50746-6

Date Collected: 10/24/14 08:25 — **Matrix: Water**
Date Received: 10/24/14 13:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108802	10/29/14 11:03	RP56	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50746-1

Client Sample ID: AOC-EMWU32T-1014

Lab Sample ID: 560-50746-7

Date Collected: 10/24/14 09:55
Matrix: Water
Date Received: 10/24/14 13:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	108802	10/29/14 11:28	RP56	TAL CC

Client Sample ID: AOC-EMWU32T-1014-1

Lab Sample ID: 560-50746-8

Date Collected: 10/24/14 09:55
Matrix: Water
Date Received: 10/24/14 13:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	108730	10/28/14 14:48	RP56	TAL CC

Client Sample ID: AOC-MWU31-1014

Lab Sample ID: 560-50746-9

Date Collected: 10/24/14 11:00
Matrix: Water
Date Received: 10/24/14 13:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		50	108730	10/28/14 15:13	RP56	TAL CC

Client Sample ID: AOC-PZ06-1014

Lab Sample ID: 560-50746-10

Date Collected: 10/24/14 11:40
Matrix: Water
Date Received: 10/24/14 13:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5000	108730	10/28/14 15:38	RP56	TAL CC

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Certification Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50746-1

Laboratory: TestAmerica Corpus Christi

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Texas	NELAP	6	T104704210	03-31-15

Method Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50746-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CC = TestAmerica Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673

Sample Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50746-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-50746-1	AOC-TB02-1014	Water	10/23/14 14:00	10/24/14 13:37
560-50746-2	AOC-EMWL34T-1014	Water	10/23/14 14:50	10/24/14 13:37
560-50746-3	AOC-EMWL36T-1014	Water	10/23/14 15:55	10/24/14 13:37
560-50746-4	AOC-EMWU3T-1014	Water	10/23/14 17:50	10/24/14 13:37
560-50746-5	AOC-EMWU6T-1014	Water	10/23/14 17:05	10/24/14 13:37
560-50746-6	AOC-MWU36-1014	Water	10/24/14 08:25	10/24/14 13:37
560-50746-7	AOC-EMWU32T-1014	Water	10/24/14 09:55	10/24/14 13:37
560-50746-8	AOC-EMWU32T-1014-1	Water	10/24/14 09:55	10/24/14 13:37
560-50746-9	AOC-MWU31-1014	Water	10/24/14 11:00	10/24/14 13:37
560-50746-10	AOC-PZ06-1014	Water	10/24/14 11:40	10/24/14 13:37

TestAmerica Corpus Christi
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone (361) 289-2673 Fax (361) 289-2471

Chain of Custody Record

TestAm
THE LEADER IN ENVIR

Loc: 560
50746

Client Information	Sampler: Liz Rinehart + Max Guide	Lab PM: Cady, John M	Carrier Tracking No(s):	COC No: 560-15198-862.3
Client Contact: David Zuvanich	Phone: 210-219-1561	E-Mail: john.cady@testamericainc.com		Page: Page 1 of 1
Company: El Paso Energy Corporation				Job #: 51746
Address: 1001 Louisiana Street Room S1905B	Due Date Requested:			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: WD# 208570			
Project Name: Elementis AOC Groundwater	Project #: 56000079			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - Benzene	8260B -	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
AOC-TB02-1014	10/23/14	1400	G	Water	N	N	X		2	
AOC-EMWL34T-1014		1450		Water					3	
~~Trip Blank AOC~~ AOC-EMWL36T-1014		1555		Water						
~~Trip Blank AOC~~ AOC-EMWU3T-1014		1750		Water						
~~Trip Blank AOC~~ AOC-EMWU6T-1014		1705		Water						
~~Trip Blank AOC~~ AOC-MWU36-1014	10/24/14	0825		Water						
~~Trip Blank AOC~~ AOC-EMWU32T-1014		0955		Water						
AOC-EMWU32T-1014-1		0955								
AOC-MWU31-1014		1100								
AOC-PZ06-1014		1140								
~~[illegible]~~										

560-50746 Chain of Custody

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☒ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [illegible]	Date/Time: 10-24-14 / 1337	Company: WBS	Received by: [illegible]	Date/Time: 10/24/14 1337	Company: TAcc
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: OBS I.D. Corr I.D. IK4		

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-50746-1

Login Number: 50746

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Rood, Vivian R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	

Unadjusted Detection Limits

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-50746-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.330	ug/L	8260B