KINDER MORGAN

By Certified Mail, Return Receipt Requested

March 26, 2014

Mr. Dale Thrush
Environmental Engineer
U.S. EPA, Region 6
Technical Section (6EN-HC)
1445 Ross Ave.
Dallas, TX 75202-2750

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
2013 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 of the 2013 AOC Annual Groundwater Monitoring Report for the 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
Mary Clair Lyons, Kinder Morgan, Inc. – w/o enclosure

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.

03.25.2014
Date

PROFESSIONAL GEOSCIENTIST CERTIFICATION

2013 AOC Annual Groundwater Monitoring Report

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

March 2014

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 2013 AOC Annual Groundwater Monitoring Report dated March 2014 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 2013 AOC Annual Groundwater Monitoring Report dated March 2014 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 _____ Date 3/24/14

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

2013 AOC Annual Groundwater Monitoring Report

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

March 2014

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 Transducer Monitoring 2-3
- 2.4 Investigation-Derived Waste Management 2-3
- 2.5 Quality Assurance/Quality Control 2-3
- 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 2013 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 2013)
Figure 5	Potentiometric Surface of the 1st WBZ (October 2013)
Figure 6	Potentiometric Surface of the 2nd WBZ (April 2013)
Figure 7	Potentiometric Surface of the 2nd WBZ (October 2013)
Figure 8	Extent of LNAPL and Dissolved Phase Benzene in 1st WBZ (April 2013)
Figure 9	Extent of LNAPL and Dissolved Phase Benzene in 1st WBZ (October 2013)
Figure 10	Extent of Dissolved Phase Benzene in 2nd WBZ (April 2013)
Figure 11	Extent of Dissolved Phase Benzene in 2nd WBZ (October 2013)

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
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
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
MS	matrix spike
MSD	matrix spike duplicate
msl	mean sea level
mg/L	milligram per liter
mL/min	milliliter per minutes
mS/cm	millisiemens per centimeter
mV	millivolts
NA	Not applicable
ND	Not detected

Acronyms and Abbreviations (Continued)

NM	not measured
NR	not recorded
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 2013.

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, two additional 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.

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 April 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 2013, and one additional sampling event conducted during January 2014. The 2013 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;
- Monitoring of transducers;
- 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 2013. Fluid levels were measured in 187 wells in April and 186 wells in October 2013. Figure 2 shows the location of wells on the Elementis property included in the gauging 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 2013 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 2013, 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. Additional groundwater samples were collected in January 2014 from five wells located in the IM Area. The January 2014 sampling is not specified in the ***CMS*** but was performed to obtain additional benzene data within the IM Area.

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, and one monitor well (OW-L15) was sampled using 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 due to a bent or shifted well casing which prevented the deployment of a pump.

Water quality parameters measured during the April and October 2013 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 Transducer Monitoring

Transducer monitoring was initially conducted as part of the Short-term GMP to document hydraulic gradient reversal and containment of the LNAPL and dissolved phase plumes in the IM Area. Transducer monitoring is not a requirement of the ***CMS*** for the Long-term GMP.

2.4 Investigation-Derived Waste Management

Purge water generated by groundwater sampling 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 treatment system. 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 three 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 semiannual groundwater sampling per the ***CMS***; however, measurable LNAPL was detected in each well during the April 2013 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, grab groundwater samples were collected in April and October 2013 and a low-flow groundwater sample was collected from nearby well PZ-05 in April 2013 to replace the planned April 2013 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.

- Additional groundwater samples were collected from 12 wells not included in the ***CMS*** to show benzene trends in the vicinity of the eastern portion of the barrier wall in IM Area. Recovery wells EMW-48, R1, RW-3, and monitor well EMW-U4T were sampled in April 2013. Recovery wells EMW-48, R1, and monitor wells EMW-U4T, EPZ-08, PZ09, and MW-U29 were sampled in October 2013. Recovery well EW-9, and monitor wells EMW-49, MW-U28, MW-U31, and EMW-50 were sampled in January 2014 as a part of an additional sampling event. All groundwater samples from monitor wells were collected according to the ***CMS***; however, samples from active recovery wells were collected as grab samples only.

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 2013 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 2013, groundwater in the 1st WBZ generally flowed in a northeasterly direction across the site with gradients ranging from 0.0017 to 0.0057 feet per foot (ft/ft) in April and 0.0013 to 0.0067 ft/ft in October 2013. 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 2013 are shown on Figures 4 and 5, respectively.

3.1.2 2nd WBZ

During April and October 2013, the hydraulic gradient in the 2nd WBZ was approximately 0.0016 ft/ft in April and 0.0015 ft/ft in October 2013, 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 2013 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). Downward hydraulic gradients ranging from 0.01046 ft/ft in the eastern portion of the site (EMW-U41T/EMW-L41T) to 0.03373 ft/ft in the southern portion of the site (EMW-U25T/EMW-L37T) were observed during both April and October 2013. Upward hydraulic gradients were observed in the northeastern portion of the site at EMW-U6T/EMW-L6T in April and October 2013. Vertical gradients switched from upward in April to downward in October 2013 at EMW-U10T/EMW-L9T in the IM Area. Well pair LPZ-13/EMW-L34T in the central portion of the site had vertical gradients switch from downward in April to upward in October 2013. A summary of the comparisons is presented in Table 5.

3.2 LNAPL Distribution and Dissolved Phase Benzene Results

Samples were collected from 46 monitor wells and four recovery wells during the April 2013 event and 28 monitor wells and three recovery wells during the October 2013 event. Additional

samples were collected in January 2014 from four monitor wells and one recovery well. 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 2013 and January 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 2013 synoptic gauging events (Table 3). LNAPL was not detected in the 2nd WBZ. In April 2013, LNAPL was detected in 70 wells, with thicknesses ranging from 0.10 ft to 4.90 ft. In October 2013, LNAPL was detected in 63 wells, with thicknesses ranging from 0.07 ft to 4.81 ft. The maximum apparent thickness of LNAPL measured within the Facility was in well LPZ-14, which is located in the east 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 2013 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 11 wells during the April 2013 sampling event. Four of the wells included EMW-U40T (61.6 mg/L) along the southern boundary of the AOC Area, north of the Valero Refinery at monitor wells EMW-U17T (3.96 mg/L) on the eastern part of the AOC Area at monitor wells EMW-U29T (29.7 mg/L) and OW-

U43 (253 mg/L). The other 7 benzene samples that were above the FRG were from wells located in the IM Area and include MW-U31 (5.55 mg/L), PZ-06 (522 mg/L), EMW-U4T (957 mg/L), RW-3 (67.9 mg/L), MW-U32 (45.2 mg/L), EMW-48 (779 mg/L) and R1 (943 mg/L). For samples collected from the remaining monitor wells in April 2013, dissolved concentrations of benzene were non-detect or were detected below the FRG.

During the October 2013 sampling event wells, EMW-U17T (3.92 mg/L) and OW-U43 (444 mg/L) had benzene detections above the FRG. Wells EMW-U40T and EMW-U29T were not sampled during the October 2013 event. In the IM Area, 8 well samples in October 2013 were above the FRG and included OW-U38 (1.63 mg/L), PZ-09 (484 mg/L), EMW-U4T (15.1 mg/L), EPZ-08 (0.439 mg/L), MW-U29 (0.777 mg/L), MW-U32 (233 mg/L), EMW-48 (1,130 mg/L) and R1 (1,140 mg/L). IM Area wells MW-U31, PZ-06, and RW-3 were not sampled during the October 2013 event. For samples collected from the remaining monitor wells on October 2013, dissolved concentrations of benzene were non-detect or were detected below the FRG.

In January 2014 an additional groundwater sampling event from five wells located in the IM Area was performed. This sampling was not included in the AOC Long Term GMP but was performed to evaluate short term benzene trends in the IM Area in the vicinity of well MW-U31. Monitor wells included in the January 2014 event included EMW-50, MW-U31, MW-U28, EMW-49, and recovery well EW-9. Benzene was detected above the FRG in wells MW-U31 (14.4 mg/L) and EW-9 (1.2 mg/L); the other three wells had concentrations of benzene below the FRG.

Table 6 summarizes the analytical results for the 2013 and January 2014 monitoring events and also shows the AOC semiannual monitoring results from 2011 and 2012. Inclusion of the 2011 and 2012 past results is intended to provide a temporal reference for the 2013 and January 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, 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 2013 sampling events, groundwater from the 2nd WBZ exceeded the benzene FRG (0.0708 mg/L) at three wells. Well EMW-L36T (approximately 30 ft east of the Valero Refinery property boundary) had benzene concentrations of 175 mg/L in April and 1,080 mg/L in October 2013. Wells located in the middle of the Facility, EMW-L34T (492 mg/L in April and 468 mg/L in October 2013) and EMW-L35B (2.05 mg/L in April and 5.88 mg/L in October 2013) exceeded the FRG. Previously, well EMW-L39T, located north of the Elementis operations area, had a benzene concentration of 0.158 mg/L in October 2012; however, in April and October 2013 the benzene concentrations were lower than the FRG

(0.0397 mg/L and 0.00425 mg/L, respectively). 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 2013, and the analytical data are summarized in Table 6.

The vertical profile of benzene in the 2nd WBZ is assessed with samples collected from two wells in the center of the plume: one screened at the top of the 2nd WBZ (EMW-L34T) and another screened at the bottom of the 2nd WBZ (EMW-L35B). The samples from the well screened at the top of the 2nd WBZ exhibited benzene concentrations of 492 mg/L (April 2013) and 468 mg/L (October 2013), while the well screened at the bottom of the 2nd WBZ had benzene concentrations two orders of magnitude less at 2.05 mg/L in April 2013 and 5.88 mg/L in October 2013.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the AOC groundwater data collected during 2013 and January 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. Apparent LNAPL thicknesses slightly decreased from the April 2013 event to the October 2013 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, with the exception of the April 2013 and January 2014 benzene result in well MW-U31.

- 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 2013 demonstrate performance are discussed below.

Objective 1: 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 2013 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 in well MW-U31 were observed above the FRG during annual sampling in April 2013 and confirmed in January 2014. The April 2013 sample was the first occurrence of an MW-U31 benzene sample exceeding the FRG. In addition to MW-U31, the four closest wells to MW-U31 were also sampled for benzene in January 2014. Monitor well

MW-U28, located approximately 40 ft west (crossgradient) from MW-U31 had a benzene concentration of 0.00374 mg/L, and EMW-50, located approximately 80 ft east (crossgradient) from MW-U31 had a benzene concentration of 0.000326 mg/L. Monitor well EMW-49 is located approximately 20 ft south (upgradient) and on the upgradient side of the barrier wall from MW-U31 had a benzene concentration of 0.00014 mg/L. Recovery well EW-9 located approximately 30 ft west and on the upgradient side of the barrier wall from MW-U31 had a benzene concentration of 1.2 mg/L and was the only other well sampled in January 2014 with a benzene result greater than the FRG.

Objective 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. Analytical data from groundwater samples collected during 2013 show that dissolved phase extent in the 1st WBZ is not increasing.

Objective 3: Dissolved phase contamination above the FRG in the 2nd WBZ is not entering the CCIH ship channel. Analytical data from groundwater samples collected during 2013 show that the dissolved phase contamination in the 2nd WBZ is not entering the CCIH (see Figures 10 and 11).

Objective 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. It appears that the extent of dissolved phase contamination in the 2nd WBZ is not increasing.

Objective 5: 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 2014. 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 2014. However, it is recommended that 1st WBZ wells, PZ-06 and MW-U31 be monitored for benzene on a semiannual basis during 2014. Monitor wells in the 2nd WBZ will be sampled and analyzed for benzene concentrations in April and October 2014. Site wide gauging events will be conducted again in April and October 2014.

Based on the PZ-06 and MW-U31 benzene concentrations detected in groundwater, it is recommended that additional remedial action alternatives be investigated in the IM Area. The remedial actions to be considered may include, but are not limited to, redeveloping and rehabilitating existing recovery wells, installing new recovery well(s), air sparging, SVE, or enhanced biological degradation.

5.0 REFERENCES

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Tables

Table 1. Site Chronology

Date	Area Addressed		Description
	AOC[1]	AFJ[2]	
February 2014	X		Submittal of "*2013 2nd Semiannual Indoor Air Monitoring Report*" to the U.S. Environmental Protection Agency (EPA).
January 2014	X		Sampled 5 wells in the 1st water bearing zone (WBZ) in the Interim Measures (IM) Area as additional sampling to the Administrative Order on Consent (AOC) Area Long-term Groundwater Monitoring Program (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) and plugged and abandoned well T-11.
September 2013		X	Submittal of "*Final Groundwater Monitoring Program, Semiannual Report, Reporting Period of January 1, 2013 - June 30, 2013"* to Texas Commission on Environmental Quality (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 soil vapor extraction (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.
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.

Table 1. Site Chronology (Continued)

Date	Area Addressed		Description
	AOC[1]	AFJ[2]	
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).
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.

Table 1. Site Chronology (Continued)

Date	Area Addressed		Description
	AOC[1]	AFJ[2]	
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 plugged and abandoned 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.
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.

Table 1. Site Chronology (Continued)

Date	Area Addressed		Description
	AOC[1]	AFJ[2]	
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. U.S. EPA Docket No. RCRA-VI-7003-01-01. September 6.
[2] Texas Commission on Environmental Quality (TCEQ), April 1998. Agreed Final Judgment, 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		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
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
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 sampled as a grab sample. PZ-05 was sampled in place of MW-U32 during the April 2013 sampling event.

(3) LPZ-33 was observed to have measurable light non-aqueous phase liquid (LNAPL) during both the April and October 2013 sampling events. Therefore, no samples were collected from 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 2013 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	16-Apr-13	ND	10.84	0.00	-1.90
			15-Oct-13	ND	19.30	0.00	-10.36
CDSHAL*	8.69	NA	16-Apr-13	ND	10.47	0.00	-1.78
			15-Oct-13	ND	10.50	0.00	-1.81
DG01	13.17	0.86	16-Apr-13	ND	10.66	0.00	2.51
			15-Oct-13	ND	10.51	0.00	2.66
DG02	13.67	0.86	16-Apr-13	ND	11.17	0.00	2.50
			15-Oct-13	10.95	11.31	0.36	2.67
DG03	14.05	0.86	16-Apr-13	11.45	12.07	0.62	2.51
			15-Oct-13	ND	11.24	0.00	2.81
DG04	13.72	0.86	16-Apr-13	11.56	13.00	1.44	1.96
			15-Oct-13	11.30	12.77	1.47	2.21
EMW45	11.36	0.85	16-Apr-13	7.98	8.70	0.72	3.27
			15-Oct-13	7.47	8.18	0.71	3.78
EMW46	12.47	NA	16-Apr-13	ND	8.95	0.00	3.52
			15-Oct-13	ND	8.63	0.00	3.84
EMW47	9.85	0.85	16-Apr-13	ND	7.13	0.00	2.72
			15-Oct-13	ND	6.71	0.00	3.14
EMW48*	13.19	NA	16-Apr-13	ND	11.90	0.00	1.29
			15-Oct-13	ND	11.41	0.00	1.78
EMW49	12.84	NA	16-Apr-13	ND	10.18	0.00	2.66
			15-Oct-13	ND	9.93	0.00	2.91
EMW50	13.26	NA	16-Apr-13	ND	10.85	0.00	2.41
			15-Oct-13	ND	10.77	0.00	2.49
EMWU10T	28.01	NA	16-Apr-13	ND	24.73	0.00	3.28
			15-Oct-13	ND	23.36	0.00	4.65
EMWU11T	24.85	NA	16-Apr-13	ND	19.41	0.00	5.44
			15-Oct-13	ND	18.34	0.00	6.51
EMWU12T	29.09	0.81	16-Apr-13	22.84	26.36	3.52	5.58
			15-Oct-13	22.52	26.36	3.84	5.84
EMWU13T	25.58	0.81	16-Apr-13	18.63	21.89	3.26	6.33
			15-Oct-13	18.55	19.29	0.74	6.89
EMWU14T	27.99	0.78	16-Apr-13	NM	NM	NA	NA
			15-Oct-13	NM	NM	NA	NA
EMWU15T	28.45	0.80	16-Apr-13	21.90	24.35	2.45	6.06
			15-Oct-13	ND	22.01	0.00	6.44
EMWU16T	28.38	0.80	16-Apr-13	22.20	24.84	2.64	5.65
			15-Oct-13	22.3	25.00	2.70	5.54
EMWU17T	27.41	NA	16-Apr-13	ND	21.81	0.00	5.60
			15-Oct-13	ND	21.90	0.00	5.51
EMWU18T	26.84	0.87	16-Apr-13	21.36	22.85	1.49	5.29
			15-Oct-13	21.10	21.97	0.87	5.63
EMWU19T	25.88	0.83	16-Apr-13	19.97	21.97	2.00	5.57
			15-Oct-13	19.90	21.95	2.05	5.63
EMWU1T	21.52	NA	16-Apr-13	ND	17.95	0.00	3.57
			15-Oct-13	ND	17.55	0.00	3.97
EMWU20T	29.88	0.83	16-Apr-13	23.75	26.70	2.95	5.63
			15-Oct-13	23.77	26.76	2.99	5.60

Table 3. Fluid Level Measurements for April and October 2013 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)							
EMWU21T	29.28	NA	16-Apr-13	ND	23.57	0.00	5.71
			15-Oct-13	ND	23.28	0.00	6.00
EMWU22T	29.50	0.78	16-Apr-13	23.67	24.87	1.20	5.57
			15-Oct-13	NM	NM	NA	NA
EMWU23T	32.32	0.88	16-Apr-13	26.28	26.85	0.57	5.97
			15-Oct-13	26.02	26.75	0.73	6.21
EMWU24T	32.08	0.81	16-Apr-13	ND	24.96	0.00	7.12
			15-Oct-13	ND	24.77	0.00	7.31
EMWU25T	30.19	0.84	16-Apr-13	22.87	25.13	2.26	6.96
			15-Oct-13	22.70	25.55	2.85	7.03
EMWU26T	29.44	NA	16-Apr-13	ND	23.25	0.00	6.19
			15-Oct-13	ND	23.03	0.00	6.41
EMWU27T	29.17	0.88	16-Apr-13	22.91	24.68	1.77	6.05
			15-Oct-13	22.66	24.9	2.24	6.24
EMWU28T	28.46	NA	16-Apr-13	ND	22.72	0.00	5.74
			15-Oct-13	ND	22.51	0.00	5.95
EMWU29T	27.82	NA	16-Apr-13	ND	23.32	0.00	4.50
			15-Oct-13	ND	22.86	0.00	4.96
EMWU2T	25.43	NA	16-Apr-13	ND	22.49	0.00	2.94
			15-Oct-13	ND	22.16	0.00	3.27
EMWU30T	25.05	NA	16-Apr-13	ND	20.13	0.00	4.92
			15-Oct-13	ND	19.70	0.00	5.35
EMWU31T	26.59	NA	16-Apr-13	21.59	21.61	0.02	5.00
			15-Oct-13	ND	21.39	0.00	5.20
EMWU32T	27.17	NA	16-Apr-13	ND	21.83	0.00	5.34
			15-Oct-13	ND	21.92	0.00	5.25
EMWU33T	13.36	NA	16-Apr-13	ND	10.26	0.00	3.10
			15-Oct-13	ND	9.34	0.00	4.02
EMWU3T	10.58	NA	16-Apr-13	ND	8.16	0.00	2.42
			15-Oct-13	ND	7.68	0.00	2.90
EMWU40T	29.85	NA	16-Apr-13	ND	23.51	0.00	6.34
			15-Oct-13	ND	23.36	0.00	6.49
EMWU41T	27.51	NA	16-Apr-13	ND	22.15	0.00	5.36
			15-Oct-13	ND	21.72	0.00	5.79
EMWU42T	27.08	NA	16-Apr-13	ND	22.71	0.00	4.37
			15-Oct-13	ND	21.83	0.00	5.25
EMWU4T	14.40	NA	16-Apr-13	ND	11.96	0.00	2.44
			15-Oct-13	ND	11.25	0.00	3.15
EMWU6T	23.24	NA	16-Apr-13	ND	19.41	0.00	3.83
			15-Oct-13	ND	18.99	0.00	4.25
EMWU7B	27.97	NA	16-Apr-13	ND	24.74	0.00	3.23
			15-Oct-13	ND	24.37	0.00	3.60
EPZ01	27.09	NA	16-Apr-13	ND	24.03	0.00	3.06
			15-Oct-13	ND	23.61	0.00	3.48
EPZ02	26.86	NA	16-Apr-13	ND	23.29	0.00	3.57
			15-Oct-13	ND	22.79	0.00	4.07
EPZ03	28.41	0.86	16-Apr-13	24.59	25.70	1.11	3.66
			15-Oct-13	24.35	25.06	0.71	3.96

Table 3. Fluid Level Measurements for April and October 2013 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)							
EPZ04	11.06	NA	16-Apr-13	ND	9.54	0.00	1.52
			15-Oct-13	ND	8.85	0.00	2.21
EPZ05	11.80	NA	16-Apr-13	ND	9.55	0.00	2.25
			15-Oct-13	ND	8.31	0.00	3.49
EPZ06	12.68	0.90	16-Apr-13	ND	8.75	0.00	3.93
			15-Oct-13	ND	8.60	0.00	4.08
EPZ07	13.43	NA	16-Apr-13	ND	9.90	0.00	3.53
			15-Oct-13	ND	9.78	0.00	3.65
EPZ08	15.65	NA	16-Apr-13	ND	13.71	0.00	1.94
			15-Oct-13	ND	12.92	0.00	2.73
EPZ09	26.69	0.86	16-Apr-13	21.11	23.77	2.66	5.20
			15-Oct-13	ND	20.91	0.00	5.78
EPZ11	28.35	0.86	16-Apr-13	22.48	25.30	2.82	5.47
			15-Oct-13	22.44	25.04	2.60	5.54
EPZ12	27.78	0.85	16-Apr-13	23.31	24.61	1.30	4.27
			15-Oct-13	23.16	23.88	0.72	4.51
EW7	11.10	NA	16-Apr-13	ND	7.60	0.00	3.50
			15-Oct-13	ND	7.42	0.00	3.68
EW8	11.69	NA	16-Apr-13	ND	8.18	0.00	3.51
			15-Oct-13	ND	8.02	0.00	3.67
EW9*	15.72	NA	16-Apr-13	ND	19.38	0.00	-3.66
			15-Oct-13	ND	21.25	0.00	-5.53
EWA*	13.84	NA	16-Apr-13	ND	13.80	0.00	0.04
			15-Oct-13	ND	13.23	0.00	0.61
EWA-EAST	13.78	0.86	16-Apr-13	11.30	13.70	2.40	2.14
			15-Oct-13	10.92	13.41	2.49	2.51
EWB*	13.18	NA	16-Apr-13	ND	25.37	0.00	-12.19
			15-Oct-13	ND	25.32	0.00	-12.14
EWB-EAST	13.04	0.86	16-Apr-13	10.27	10.64	0.37	2.72
			15-Oct-13	ND	9.65	0.00	3.39
EWC	13.51	NA	16-Apr-13	ND	11.11	0.00	2.40
			15-Oct-13	ND	10.37	0.00	3.14
EWC-EAST	13.68	NA	16-Apr-13	ND	11.00	0.00	2.68
			15-Oct-13	ND	10.39	0.00	3.29
EWD*	13.09	NA	16-Apr-13	ND	17.77	0.00	-4.68
			15-Oct-13	ND	17.75	0.00	-4.66
LPZ01	28.82	NA	16-Apr-13	ND	21.16	0.00	7.66
			15-Oct-13	ND	21.18	0.00	7.64
LPZ02	31.04	NA	16-Apr-13	ND	24.62	0.00	6.42
			15-Oct-13	ND	24.49	0.00	6.55
LPZ03	30.09	NA	16-Apr-13	ND	22.93	0.00	7.16
			15-Oct-13	ND	22.84	0.00	7.25
LPZ04	30.99	NA	16-Apr-13	ND	24.68	0.00	6.31
			15-Oct-13	ND	24.57	0.00	6.42
LPZ05	30.34	0.88	16-Apr-13	23.49	28.25	4.76	6.28
			15-Oct-13	23.37	28.18	4.81	6.28
LPZ06	29.24	NA	16-Apr-13	ND	23.03	0.00	6.21
			15-Oct-13	ND	22.86	0.00	6.38

Table 3. Fluid Level Measurements for April and October 2013 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)							
LPZ07	28.02	NA	16-Apr-13	ND	21.97	0.00	6.05
			15-Oct-13	ND	21.88	0.00	6.14
LPZ08	29.31	NA	16-Apr-13	ND	23.50	0.00	5.81
			15-Oct-13	ND	23.43	0.00	5.88
LPZ09	28.33	0.88	16-Apr-13	21.76	24.96	3.20	6.18
			15-Oct-13	21.65	24.63	2.98	6.31
LPZ10	28.37	0.88	16-Apr-13	21.78	26.02	4.24	6.07
			15-Oct-13	21.65	25.60	3.95	6.23
LPZ11	28.90	NA	16-Apr-13	ND	22.91	0.00	5.99
			15-Oct-13	ND	22.69	0.00	6.21
LPZ12	28.00	0.88	16-Apr-13	21.41	26.26	4.85	6.00
			15-Oct-13	21.33	26.06	4.73	6.09
LPZ13	29.32	NA	16-Apr-13	ND	23.49	0.00	5.83
			15-Oct-13	ND	23.52	0.00	5.80
LPZ14	28.88	0.88	16-Apr-13	22.55	27.45	4.90	5.73
			15-Oct-13	22.35	26.79	4.44	5.99
LPZ15	28.98	NA	16-Apr-13	23.02	23.32	0.30	5.67
			15-Oct-13	ND	23.79	0.00	4.94
LPZ16	28.91	0.88	16-Apr-13	22.22	26.67	4.45	5.85
			15-Oct-13	22.07	26.18	4.11	6.04
LPZ17	25.78	0.88	16-Apr-13	19.36	23.90	4.54	5.88
			15-Oct-13	19.22	23.55	4.33	5.88
LPZ18	26.18	0.80	16-Apr-13	20.01	22.89	2.88	5.59
			15-Oct-13	19.82	22.85	3.03	5.75
LPZ19	29.38	NA	16-Apr-13	ND	23.76	0.00	5.62
			15-Oct-13	23.66	24.35	0.69	5.64
LPZ20	28.07	NA	16-Apr-13	ND	22.52	0.00	5.35
			15-Oct-13	ND	22.25	0.00	5.62
LPZ21	28.27	0.88	16-Apr-13	21.95	25.66	3.71	5.62
			15-Oct-13	21.81	24.60	2.79	5.87
LPZ22	28.41	0.88	16-Apr-13	22.63	25.21	2.58	5.15
			15-Oct-13	22.41	23.96	1.55	5.50
LPZ23	29.25	NA	16-Apr-13	ND	23.62	0.00	5.35
			15-Oct-13	ND	23.31	0.00	5.66
LPZ24	25.13	0.80	16-Apr-13	19.46	21.47	2.01	5.27
			15-Oct-13	19.12	21.72	2.60	5.49
LPZ25	24.29	0.88	16-Apr-13	18.49	22.60	4.11	5.09
			15-Oct-13	18.29	21.00	2.71	5.46
LPZ26	24.81	NA	16-Apr-13	ND	19.69	0.00	5.12
			15-Oct-13	ND	19.34	0.00	5.47
LPZ27	27.58	0.88	16-Apr-13	22.03	26.56	4.53	4.76
			15-Oct-13	21.69	25.24	3.55	5.22
LPZ28	25.45	0.88	16-Apr-13	20.26	24.35	4.09	4.69
			15-Oct-13	19.90	23.40	3.50	5.12
LPZ29	28.54	NA	16-Apr-13	ND	23.30	0.00	5.24
			15-Oct-13	ND	23.27	0.00	5.27
LPZ30	27.32	NA	16-Apr-13	21.98	22.44	0.46	5.28
			15-Oct-13	21.75	23.31	1.56	5.35

Table 3. Fluid Level Measurements for April and October 2013 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)							
LPZ31	27.46	0.80	16-Apr-13	21.36	24.37	3.01	5.50
			15-Oct-13	21.48	24.44	2.96	5.39
LPZ32	28.22	NA	16-Apr-13	ND	23.97	0.00	4.25
			15-Oct-13	ND	23.49	0.00	4.73
LPZ33	27.14	0.86	16-Apr-13	21.94	22.03	0.09	5.19
			15-Oct-13	21.88	21.89	0.01	5.26
LPZ34	26.49	NA	16-Apr-13	ND	22.64	0.00	3.85
			15-Oct-13	ND	22.13	0.00	4.36
LPZ35	24.82	NA	16-Apr-13	21.10	21.82	0.72	3.62
			15-Oct-13	20.66	21.66	1.00	4.02
LPZ37	26.18	NA	16-Apr-13	ND	21.41	0.00	4.77
			15-Oct-13	ND	21.05	0.00	5.13
LPZ38	26.57	0.86	16-Apr-13	ND	22.58	0.00	3.99
			15-Oct-13	ND	22.29	0.00	4.28
LPZ39	27.12	NA	16-Apr-13	ND	22.35	0.00	4.77
			15-Oct-13	ND	22.25	0.00	4.87
LPZ40	26.94	NA	16-Apr-13	ND	21.49	0.00	5.45
			15-Oct-13	ND	21.61	0.00	5.33
LPZ41	25.80	NA	16-Apr-13	ND	20.84	0.00	4.96
			15-Oct-13	ND	20.79	0.00	5.01
LPZ44	25.75	NA	16-Apr-13	ND	21.11	0.00	4.64
			15-Oct-13	ND	20.80	0.00	4.95
LPZ45	28.33	0.86	16-Apr-13	22.74	26.66	3.92	5.04
			15-Oct-13	22.42	25.26	2.84	5.51
LPZ46	24.97	0.86	16-Apr-13	19.03	22.91	3.88	5.39
			15-Oct-13	18.81	21.38	2.57	5.80
LPZ47	28.41	0.86	16-Apr-13	22.63	22.64	0.01	5.78
			15-Oct-13	ND	22.32	0.00	6.09
LPZ48	27.91	0.86	16-Apr-13	21.64	25.50	3.86	5.73
			15-Oct-13	21.52	24.20	2.68	6.01
LPZ49	28.48	0.88	16-Apr-13	22.57	25.15	2.58	5.60
			15-Oct-13	22.44	25.25	2.81	5.70
LPZ50	30.16	0.88	16-Apr-13	24.25	26.19	1.94	5.68
			15-Oct-13	23.21	26.55	3.34	6.55
LPZ51	28.85	0.88	16-Apr-13	22.88	25.00	2.12	5.72
			15-Oct-13	22.87	25.14	2.27	5.71
MP01	12.87	0.86	16-Apr-13	ND	10.76	0.00	2.12
			15-Oct-13	ND	10.68	0.00	2.20
MP02	13.14	NA	16-Apr-13	ND	11.09	0.00	2.06
			15-Oct-13	ND	10.99	0.00	2.16
MP03	14.85	0.86	16-Apr-13	12.67	14.26	1.59	1.96
			15-Oct-13	12.30	13.50	1.20	2.38
MP03A	14.74	0.86	16-Apr-13	11.72	13.56	1.84	2.76
			15-Oct-13	11.22	11.94	0.72	3.42
MP04	15.40	NA	16-Apr-13	ND	13.17	0.00	2.23
			15-Oct-13	ND	12.62	0.00	2.78
MP05	15.23	0.86	16-Apr-13	13.50	14.55 DTB	<1.05 DTB>	NA
			15-Oct-13	13.12	14.58 DTB	<1.46 DTB>	NA

Table 3. Fluid Level Measurements for April and October 2013 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)							
MP06	15.42	0.86	16-Apr-13	13.60	14.40 DTB	<0.80 DTB>	NA
			15-Oct-13	13.27	14.29	1.02	2.01
MP06A	15.26	0.86	16-Apr-13	12.65	16.09	3.44	2.13
			15-Oct-13	12.11	14.46	2.35	2.82
MP07	15.97	0.86	16-Apr-13	14.95	17.40	2.45	0.69
			15-Oct-13	13.61	15.78	2.17	2.06
MP07A	15.16	0.86	16-Apr-13	12.61	16.45	3.84	2.01
			15-Oct-13	12.10	14.98	2.88	2.66
MP08	15.99	0.86	16-Apr-13	ND	12.44	0.00	3.55
			15-Oct-13	ND	12.82	0.00	3.17
MP09	13.36	NA	16-Apr-13	ND	10.06	0.00	3.30
			15-Oct-13	ND	9.70	0.00	3.66
MWU25	13.19	0.86	16-Apr-13	ND	10.10	0.00	3.09
			15-Oct-13	ND	9.78	0.00	3.41
MWU26A*	14.80	0.86	16-Apr-13	ND	15.22	0.00	-0.42
			15-Oct-13	14.79	14.83	0.04	0.00
MWU27	13.82	0.86	16-Apr-13	11.06	11.20	0.14	2.74
			15-Oct-13	10.65	10.77	0.12	3.15
MWU28	13.01	NA	16-Apr-13	ND	11.05	0.00	1.96
			15-Oct-13	ND	10.55	0.00	2.46
MWU29	13.82	NA	16-Apr-13	ND	12.40	0.00	1.42
			15-Oct-13	ND	11.89	0.00	1.93
MWU31	13.38	NA	16-Apr-13	ND	11.31	0.00	2.07
			15-Oct-13	ND	10.88	0.00	2.50
MWU32*	13.35	NA	16-Apr-13	ND	14.45	0.00	-1.10
			15-Oct-13	ND	12.90	0.00	0.45
MWU33	26.41	0.86	16-Apr-13	22.78	25.06	2.28	3.31
			15-Oct-13	22.50	23.82	1.32	3.72
MWU34	29.47	0.88	16-Apr-13	24.57	28.89	4.32	4.37
			15-Oct-13	24.25	27.36	3.11	4.84
MWU36	10.97	NA	16-Apr-13	ND	8.27	0.00	2.70
			15-Oct-13	ND	7.18	0.00	3.79
MWU37	27.98	NA	16-Apr-13	ND	22.26	0.00	5.72
			15-Oct-13	ND	22.39	0.00	5.59
MWU38	27.14	NA	16-Apr-13	ND	21.51	0.00	5.63
			15-Oct-13	ND	21.66	0.00	5.48
OWU25	32.28	0.81	16-Apr-13	24.54	27.94 TOP	<3.40 DTB>	NA
			15-Oct-13	25.05	28.39	3.34	6.60
OWU26	29.27	NA	16-Apr-13	ND	23.19	0.00	6.08
			15-Oct-13	ND	23.05	0.00	6.22
OWU27	29.13	0.83	16-Apr-13	23.24	24.52 DTB	<1.28 DTB>	NA
			15-Oct-13	23.10	24.55 DTB	<1.45 DTB>	NA
OWU28	27.40	NA	16-Apr-13	ND	22.04	0.00	5.36
			15-Oct-13	ND	21.89	0.00	5.51
OWU31	29.09	0.87	16-Apr-13	22.69	24.67	1.98	6.15
			15-Oct-13	22.55	25.39	2.84	6.18
OWU32	29.47	0.88	16-Apr-13	22.78	26.55	3.77	6.23
			15-Oct-13	22.64	26.24	3.60	6.39

Table 3. Fluid Level Measurements for April and October 2013 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)							
OWU33	30.44	0.79	16-Apr-13	22.81	26.59	3.78	6.84
			15-Oct-13	22.75	26.83	4.08	6.84
OWU36	11.87	NA	16-Apr-13	ND	6.18	0.00	5.69
			15-Oct-13	ND	6.32	0.00	5.55
OWU37	9.08	NA	16-Apr-13	ND	5.84	0.00	3.24
			15-Oct-13	ND	5.32	0.00	3.76
OWU38	14.11	NA	16-Apr-13	ND	10.15	0.00	3.96
			15-Oct-13	ND	10.18	0.00	3.93
OWU42	28.61	NA	16-Apr-13	ND	22.44	0.00	6.17
			15-Oct-13	ND	22.29	0.00	6.32
OWU43	27.07	NA	16-Apr-13	ND	21.44	0.00	5.63
			15-Oct-13	ND	20.97	0.00	6.10
OWU44	28.23	0.87	16-Apr-13	22.92	25.35	2.43	4.98
			15-Oct-13	22.52	25.00	2.48	5.38
OWU47	28.34	NA	16-Apr-13	ND	22.59	0.00	5.86
			15-Oct-13	ND	22.80	0.00	5.65
OWU48	28.89	0.88	16-Apr-13	22.34	27.09	4.75	5.68
			15-Oct-13	22.11	26.10	3.99	6.00
OWU49	28.30	0.88	16-Apr-13	21.68	25.00 DTB	<3.32 DTB>	NA
			15-Oct-13	21.55	25.07 DTB	<3.52 DTB>	NA
PZ05	14.62	NA	16-Apr-13	NM	NM	NA	NA
			15-Oct-13	NM	NM	NA	NA
PZ06	14.53	NA	16-Apr-13	ND	12.45	0.00	2.08
			15-Oct-13	ND	12.28	0.00	2.25
PZ07	13.93	NA	16-Apr-13	ND	11.27	0.00	2.66
			15-Oct-13	ND	10.58	0.00	3.35
PZ09	11.79	NA	16-Apr-13	ND	9.16	0.00	2.63
			15-Oct-13	8.68	8.69	0.01	3.11
PZ10	12.33	0.86	16-Apr-13	9.24	11.57	2.33	2.76
			15-Oct-13	8.93	10.37	1.44	3.20
R1*	13.98	NA	16-Apr-13	ND	14.81	0.00	-0.83
			15-Oct-13	ND	14.77	0.00	-0.79
R2*	12.77	0.86	16-Apr-13	12.3	12.32	0.02	0.47
			15-Oct-13	ND	11.59	0.00	1.18
R3	14.49	0.86	16-Apr-13	NM	NM	NA	NA
			15-Oct-13	12.12	13.36	1.24	2.20
R4*	11.40	NA	16-Apr-13	11.01	11.02	0.01	0.39
			15-Oct-13	ND	7.59	0.00	3.81
RW1*	13.67	0.86	16-Apr-13	ND	24.20	0.00	-10.53
			15-Oct-13	ND	26.02	0.00	-12.35
RW2*	10.91	NA	16-Apr-13	ND	16.21	0.00	-5.30
			15-Oct-13	ND	15.35	0.00	-4.44
RW3*	14.88	0.86	16-Apr-13	ND	14.35	0.00	0.53
			15-Oct-13	ND	14.12	0.00	0.76
T11	24.74	0.85	16-Apr-13	19.68	21.01	1.33	4.85
			15-Oct-13	NM	NM	NM	NM
T12	11.54	NA	16-Apr-13	ND	6.79	0.00	4.75
			15-Oct-13	ND	6.87	0.00	4.67

Table 3. Fluid Level Measurements for April and October 2013 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							
EMWL6T	23.03	NA	16-Apr-13	ND	18.77	0.00	4.26
			15-Oct-13	ND	18.54	0.00	4.49
EMWL8T	27.09	NA	16-Apr-13	ND	23.27	0.00	3.82
			15-Oct-13	ND	23.09	0.00	4.00
EMWL9T	27.86	NA	16-Apr-13	ND	24.04	0.00	3.82
			15-Oct-13	ND	23.92	0.00	3.94
EMWL34T	30.15	NA	16-Apr-13	ND	24.33	0.00	5.82
			15-Oct-13	ND	24.15	0.00	6.00
EMWL35B	30.11	NA	16-Apr-13	ND	24.65	0.00	5.46
			15-Oct-13	ND	24.45	0.00	5.66
EMWL36T	29.16	NA	16-Apr-13	ND	23.65	0.00	5.51
			15-Oct-13	ND	23.46	0.00	5.70
EMWL37T	29.88	NA	16-Apr-13	ND	24.40	0.00	5.48
			15-Oct-13	ND	24.27	0.00	5.61
EMWL38T	28.68	NA	16-Apr-13	ND	24.22	0.00	4.46
			15-Oct-13	ND	24.15	0.00	4.53
EMWL39T	28.42	NA	16-Apr-13	ND	24.53	0.00	3.89
			15-Oct-13	ND	24.31	0.00	4.11
EMWL41T	27.54	NA	16-Apr-13	ND	22.84	0.00	4.70
			15-Oct-13	ND	22.61	0.00	4.93
OWL08	24.54	NA	16-Apr-13	ND	21.11	0.00	3.43
			15-Oct-13	ND	20.87	0.00	3.67
OWL1	27.12	NA	16-Apr-13	ND	23.69	0.00	3.43
			15-Oct-13	ND	23.58	0.00	3.54
OWL14R	27.50	NA	16-Apr-13	ND	23.19	0.00	4.31
			15-Oct-13	ND	23.13	0.00	4.37
OWL15	21.53	NA	16-Apr-13	ND	17.91	0.00	3.62
			15-Oct-13	ND	17.69	0.00	3.84
OWL25	21.36	NA	16-Apr-13	ND	17.57	0.00	3.79
			15-Oct-13	ND	17.46	0.00	3.90

* Well is an operating recovery well that was pumping during the gauging event(s).
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	14-Jan-14	24.73	22.9	0.89	7.22	NR	1.2
EMW-50	23-Apr-13	25.05	15.7	0.37	7.15	1	0.0
	14-Jan-14	24.58	19.0	1.10	7.26	NR	1.0
EMW-U17T	18-Apr-13	23.20	16.2	0.31	9.24	-350	0.0
	17-Oct-13	26.26	15.7	0.04	9.17	-413	0.0
EMW-U1T	18-Apr-13	23.25	6.29	0.36	6.87	-13	0.0
EMW-U26T	18-Apr-13	24.78	4.65	0.44	6.70	-74	0.0
EMW-U28T	18-Apr-13	25.40	1.68	0.47	7.74	-144	0.0
EMW-U29T	18-Apr-13	22.38	9.17	0.37	8.36	-59	0.0
EMW-U2T	18-Apr-13	21.77	15.6	0.39	6.25	59	0.0
EMW-U30T	18-Apr-13	25.03	5.60	0.59	7.17	-71	0.0
EMW-U31T	15-Apr-13	NS	NS	NS	NS	NS	NS
EMW-U32T	19-Apr-13	21.97	11.6	0.00	7.76	-254	0.0
	16-Oct-13	27.14	16.8	0.28	7.72	-129	95.2
EMW-U33T	18-Apr-13	22.79	21.4	0.39	6.69	-86	0.0
EMW-U3T	23-Apr-13	23.18	28.5	0.13	6.51	-162	0.0
EMW-U40T	18-Apr-13	24.54	6.67	0.13	6.16	-225	0.0
EMW-U41T	18-Apr-13	26.16	5.95	0.28	6.95	-107	0.0
EMW-U42T	23-Apr-13	24.88	16.1	0.28	6.87	-44	0.0
EMW-U6T	18-Apr-13	22.74	5.72	0.16	7.78	-217	0.0
	16-Oct-13	26.66	6.67	2.75	7.78	-272	6.2
EPZ-04	23-Apr-13	23.36	55.1	0.09	6.85	-337	0.0
EPZ-05	23-Apr-13	24.11	56.4	0.07	7.00	-387	0.0
LPZ-40	23-Apr-13	24.07	17.8	0.08	6.80	-162	0.0
LPZ-41	23-Apr-13	24.40	21.8	0.19	7.38	-247	0.0
MW-U28	14-Jan-14	25.84	6.90	0.78	7.51	NR	12.9
MW-U31	23-Apr-13	26.42	22.4	0.27	6.57	-126	31.9
	13-Jan-14	25.96	24.0	1.05	6.92	NR	0.0
MW-U36	19-Apr-13	17.71	28.4	0.28	6.82	-332	0.0
	16-Oct-13	28.46	28.9	0.16	6.64	-401	44.0
MW-U37	19-Apr-13	21.71	2.93	0.35	7.45	-234	0.0
MW-U38	19-Apr-13	21.55	24.7	0.10	9.01	-373	99.1

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)							
OW-U37	18-Apr-13	22.17	35.8	0.34	6.94	-164	0.0
	16-Oct-13	27.80	35.6	0.20	6.87	-149	0.0
OW-U42	19-Apr-13	23.59	8.78	0.46	6.71	7	0.0
	17-Oct-13	26.06	11.2	0.08	6.65	-21	0.0
OW-U43	19-Apr-13	23.75	5.88	0.30	9.03	-42	0.0
	18-Oct-13	25.34	6.80	0.16	8.67	-119	0.0
PZ-05	23-Apr-13	25.12	46.9	0.19	7.31	-211	0.0
PZ-06	23-Apr-13	25.62	29.6	0.31	6.54	136	0.0
2nd WBZ							
EMW-L34T	22-Apr-13	26.37	16.6	0.11	6.13	-139	13.1
	17-Oct-13	24.21	22.1	0.68	6.05	-200	0.0
EMW-L35B	22-Apr-13	26.31	25.4	0.23	6.01	-281	0.0
	17-Oct-13	23.37	30.9	0.39	5.93	-76	0.0
EMW-L36T	22-Apr-13	29.10	13.6	0.09	6.93	-376	13.3
	17-Oct-13	25.42	15.5	0.19	6.18	-43	0.0
EMW-L37T	22-Apr-13	29.63	28.7	0.44	6.39	-69	0.0
	17-Oct-13	23.48	36.7	0.92	6.31	-152	0.0
EMW-L38T	17-Apr-13	26.26	47.7	7.32	6.22	28	0.0
	16-Oct-13	26.56	53.5	0.42	7.00	-9	0.6
EMW-L39T	22-Apr-13	28.84	40.7	0.43	6.16	-68	0.0
	17-Oct-13	27.12	50.4	0.63	6.15	-105	0.0
EMW-L41T	17-Apr-13	27.81	41.0	0.25	6.39	-59	0.0
	16-Oct-13	27.16	45.1	0.68	7.05	-77	2.7
EMW-L6T	17-Apr-13	25.14	43.0	0.41	6.39	-8	2.9
	16-Oct-13	25.93	46.3	1.14	7.09	-27	0.1
EMW-L8T	17-Apr-13	NA	NA	NA	NA	NA	NA
	16-Oct-13	NA	NA	NA	NA	NA	NA
EMW-L9T	17-Apr-13	NA	NA	NA	NA	NA	NA
	16-Oct-13	NA	NA	NA	NA	NA	NA
OW-L08	17-Apr-13	NA	NA	NA	NA	NA	NA
	16-Oct-13	NA	NA	NA	NA	NA	NA

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)
2nd WBZ (Continued)							
OW-L14R	17-Apr-13	26.12	39.6	0.30	6.49	-29	0.0
	17-Oct-13	27.16	45.9	0.23	6.43	-100	2.8
OW-L15	19-Apr-13	NA	NA	NA	NA	NA	NA
	16-Oct-13	NA	NA	NA	NA	NA	NA

Notes: Temperature, specific conductivity, dissolved oxygen, pH, oxidation-reduction potential, and turbidity were measured using a Horiba U-52 with a flow-through cell.
°C - Degrees Celsius.
mg/L - Milligrams per liter.
mS/cm - Millisiemens per centimeter.
mV - Millivolt.
NA - Not applicable. Well was purged of three well volumes then sampled. Field parameters not collected; well purged via three well-volume method.
NR - Not recorded.
NS - Well not sampled due to the presence of hydrocarbons.
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**		
4/16/2013	4.46	5.74	74.5	17	25.6	25.5	0.02285	Downward
10/15/2013	4.53	5.95	10	10			0.02530	Downward
	EMW-L37T	**EMW-U25T**	**EMW-L37T**	**EMW-U25T**	**EMW-L37T**	**EMW-U25T**		
4/16/2013	5.48	6.96	64	15	27.2	27.2	0.03373	Downward
10/15/2013	5.61	7.03	10	15			0.03234	Downward
	EMW-L41T	**EMW-U41T**	**EMW-L41T**	**EMW-U41T**	**EMW-L41T**	**EMW-U41T**		
4/16/2013	4.70	5.36	82	18	25.0	24.8	0.01046	Downward
10/15/2013	4.93	5.79	10	10			0.01359	Downward
	EMW-L6T	**EMW-U6T**	**EMW-L6T**	**EMW-U6T**	**EMW-L6T**	**EMW-U6T**		
4/16/2013	4.26	3.83	79.5	13	20.2	20.2	0.006634	Upward
10/15/2013	4.49	4.25	10	10			0.003691	Upward
	EMW-L9T	**EMW-U10T**	**EMW-L9T**	**EMW-U10T**	**EMW-L9T**	**EMW-U10T**		
4/16/2013	3.82	3.28	80	18	25.4	25.2	0.009418	Upward
10/15/2013	3.94	4.65	5	10			0.01224	Downward
	OW-L15	**T-11**	**OW-L15**	**T-11**	**OW-L15**	**T-11**		
4/16/2013	3.62	4.85	55	12	19.3	21.5	0.02869	Downward
10/15/2013	3.84	NM - Well P&A	10	10			NA	NA
	EMW-L34T	**LPZ-13**	**EMW-L34T**	**LPZ-13**	**EMW-L34T**	**LPZ-13**		
4/16/2013	5.82	5.83	48.5	13	27.2	26.6	0.0003507	Downward
10/15/2013	6.00	5.80	10	15			0.007018	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.
NA - Not applicable.
NM - Not measured.
P&A - Plugged and abandoned.

Table 6. Summary of Groundwater Benzene Analytical Results

Well ID	Apr-11	Oct-11	Apr-12	Oct-12	Apr-13	Oct-13	Jan-14
1st WBZ							
EMW-50[1]	<0.000216	NS	0.00239	NS	<0.000140	NS	0.000326J
EMW-U17T[2]	**5.81**	**4.01**	**4.56**	**3.39**	**3.96**	**3.92**	NS
EMW-U1T	<0.000210	NS	<0.000140	NS	<0.000140	NS	NS
EMW-U26T	<0.000200	NS	0.000617 J	NS	<0.000140	NS	NS
EMW-U28T	<0.000200	NS	0.000589 J	NS	<0.000140	NS	NS
EMW-U29T	<0.000887	NS	**0.640**	NS	**29.7**	NS	NS
EMW-U2T	0.00145	NS	0.000298 J	NS	0.000198	NS	NS
EMW-U30T	<0.000220	NS	<0.000140	NS	<0.000140	NS	NS
EMW-U31T	**10.6**	NS	**0.568 J**	NS	NS	NS	NS
EMW-U32T	0.00526	NS	<0.000140	0.000383 J	0.0168	0.0247	NS
EMW-U33T	<0.0100	NS	<0.0140	NS	<0.0700	NS	NS
EMW-U3T	<0.000200	NS	0.000467 J	NS	<0.0140	NS	NS
EMW-U40T	**6.00**	NS	**20.2**	NS	**61.6**	NS	NS
EMW-U41T	<0.000200	NS	<0.000140	NS	<0.000140	NS	NS
EMW-U42T	0.000347	NS	<0.000700	NS	<0.000700	NS	NS
EMW-U6T	<0.000200	NS	<0.000140	0.000400 J	<0.000140	<0.000140	NS
EPZ-04	<0.000221	NS	0.000466 J	NS	<0.000140	NS	NS
EPZ-05	<0.000200	NS	0.000238 J	NS	<0.000140	NS	NS
LPZ-40	<0.000305	NS	0.00213	NS	0.00309	NS	NS
LPZ-41	0.013	NS	0.0102	NS	0.00118	NS	NS
MW-U31	<0.000374	NS	0.000319 J	NS	**5.55**	NS	**14.4**
MW-U36	<0.00400	NS	<0.00700	<0.00700	<0.00280	<0.00280	NS
MW-U37	<0.000200	NS	<0.000140	NS	<0.000140	NS	NS
MW-U38	0.0162	NS	0.0266	NS	0.0282	NS	NS
OW-U37[2]	<0.000200	<0.000140	<0.000140	<0.000140	<0.000140	<0.000140	NS
OW-U42[2]	<0.000748	<0.000140	<0.000140	<0.000140	<0.000140	<0.000140	NS
OW-U43[2]	**344**	**365**	**407**	**330**	**253**	**444**	NS
OW-U46[2]	0.00931	0.0108	0.00976	0.00992	0.00991	0.0109	NS
OW-U38[2]	0.000257	0.0026	0.00431	**0.101**	0.000489J	**1.63**	NS
EMWU21T[2]	0.00054	0.000224J	<0.000140	<0.000140	<0.000140	<0.000140	NS
MW-U05[2]	0.0082	0.00177	0.009035	0.00113	<0.000280	0.00201	NS
PZ-05[3][4]	<0.000375	NS	<0.000140	NS	<0.000140	NS	NS
PZ-06[3]	NS	NS	**1,230**	NS	**522**	NS	NS
PZ-09[3]	NS	NS	NS	NS	NS	**484**	NS
EMW-U4T[3]	NS	NS	NS	NS	**957**	**15.1**	NS
EPZ-08[3]	NS	NS	NS	NS	NS	**0.439**	NS
RW-3[3]	NS	NS	NS	NS	**67.9**	NS	NS
MW-U28[3]	NS	NS	NS	NS	NS	NS	0.00374
MW-U29[3]	NS	NS	NS	NS	NS	**0.777**	NS
MW-U32[4]	NS	NS	NS	NS	**45.2**	**233**	NS
EMW-48[3]	NS	NS	NS	NS	**779**	**1,130**	NS
EMW-49[3]	NS	NS	NS	NS	NS	NS	0.00014
EW-9[3]	NS	NS	NS	NS	NS	NS	**1.2**
R1[3]	NS	NS	NS	NS	**943**	**1,140**	NS
2nd WBZ							
EMW-L34T	**284**	**278**	**331**	**239**	**492**	**468**	NS
EMW-L35B	**19.3**	**8.07**	**3.34**	**0.346**	**2.05**	**5.88**	NS
EMW-L36T	**1,770**	**816**	**984**	**760**	**175**	**1,080**	NS
EMW-L37T	<0.000200	<0.000140	0.00386	0.000506 J	0.000221 J	<0.000140	NS
EMW-L38T	0.000368 J	0.000920 J	0.000236 J	<0.000140	0.00143	<0.000140	NS
EMW-L39T	0.0015	0.012	0.00641	**0.158**	0.0397	0.00425	NS
EMW-L41T	0.00161	0.000173 J	<0.000140	<0.000140	<0.000140	<0.000140	NS
EMW-L6T	0.000592 JH	<0.00700	0.000871 J	0.0152	0.000392	0.000416 J	NS
EMW-L8T	<0.000200	<0.000140	<0.000140	0.000635 J	<0.000140	<0.000140	NS
EMW-L9T	0.000436 J	0.000543 J	0.000204 J	0.000630 J	<0.000140	0.000358 J	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
2nd WBZ (Continued)							
OW-L08	<0.000200	0.00462	<0.000140	<0.000140	<0.000140	<0.000140	NS
OW-L14R	0.000322 JH	0.000475 J	<0.000140	0.00284	0.00622	<0.000140	NS
OW-L15[(2)]	0.00204	<0.000140	<0.000140	<0.000140	<0.000140	<0.000160	NS

Notes:
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 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 2013 (URS Corporation [URS], September 2013) and March 2014 (RPS [in process], March 2014).
(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 during the April 2013 sampling event. PZ-05 was sampled in place of MW-U32 during the April 2013 sampling event. However, grab groundwater samples were collected from MW-U32 during the April and October 2013 sampling event to show benzene trends.
< - 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
Red indicates groundwater recovery well and grab groundwater sample collected.

Figures

Path: L:\AGE\Projects\ENV\Kinder Morgan\Kinder_Morgan_Elementis\Drawings-GIS\AOC_GW_Monitoring\2013\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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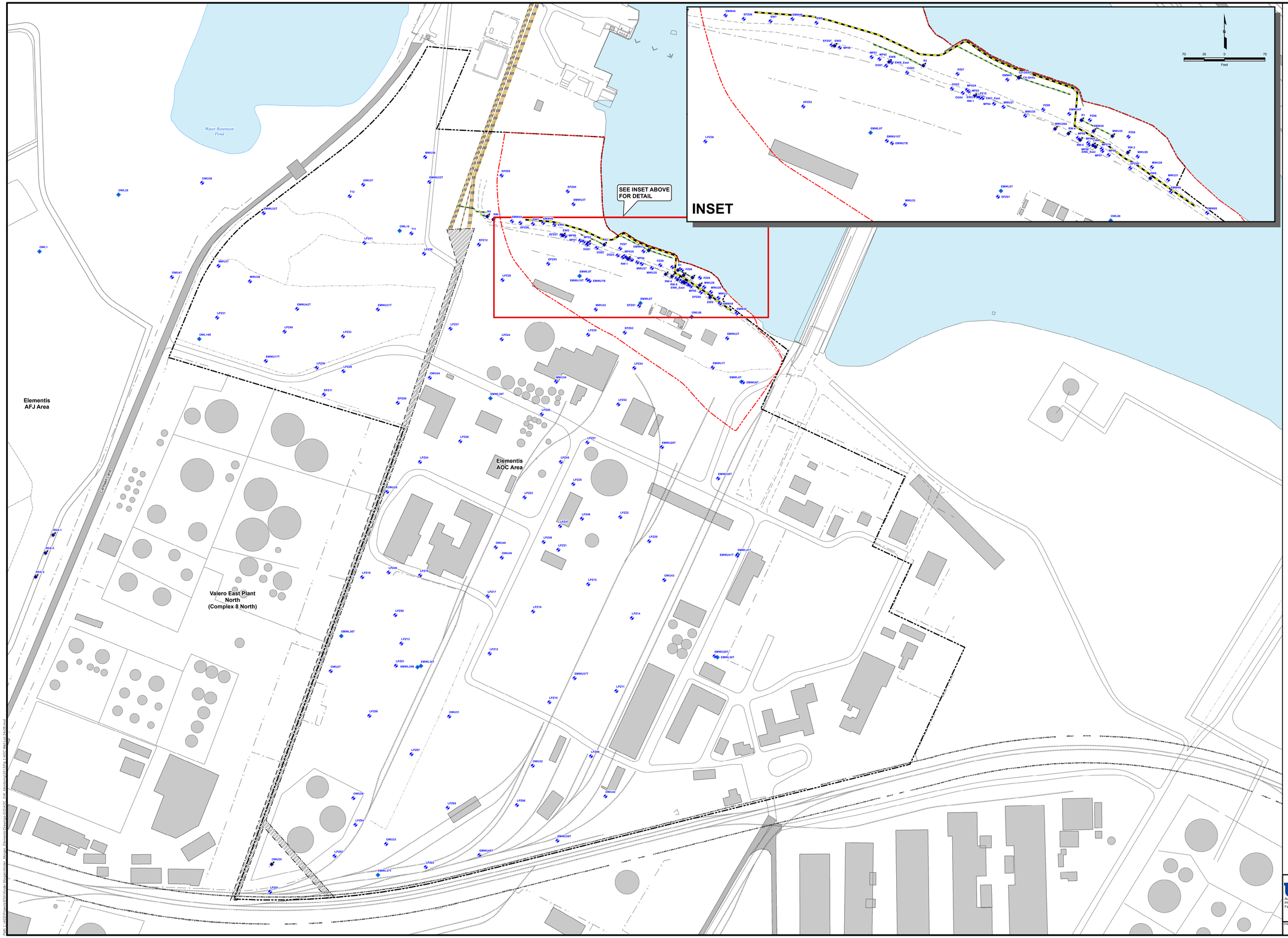
Client: El Paso Merchant Energy-Petroleum Company
Elementis Site-Corpus Christi, Texas

Report: AOC Annual Groundwater Monitoring Report

Title: **Site Location Map**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/24/2014	Fig 1 Site Loc.mxd	1



Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Aboveground Pipeline
- Recovery Trench
- Monitor Well Location (1st WBZ)
- Monitor Well Location (2nd WBZ)
- Recovery Well Location

Note:
Only wells included in AOC Monitoring Program shown.

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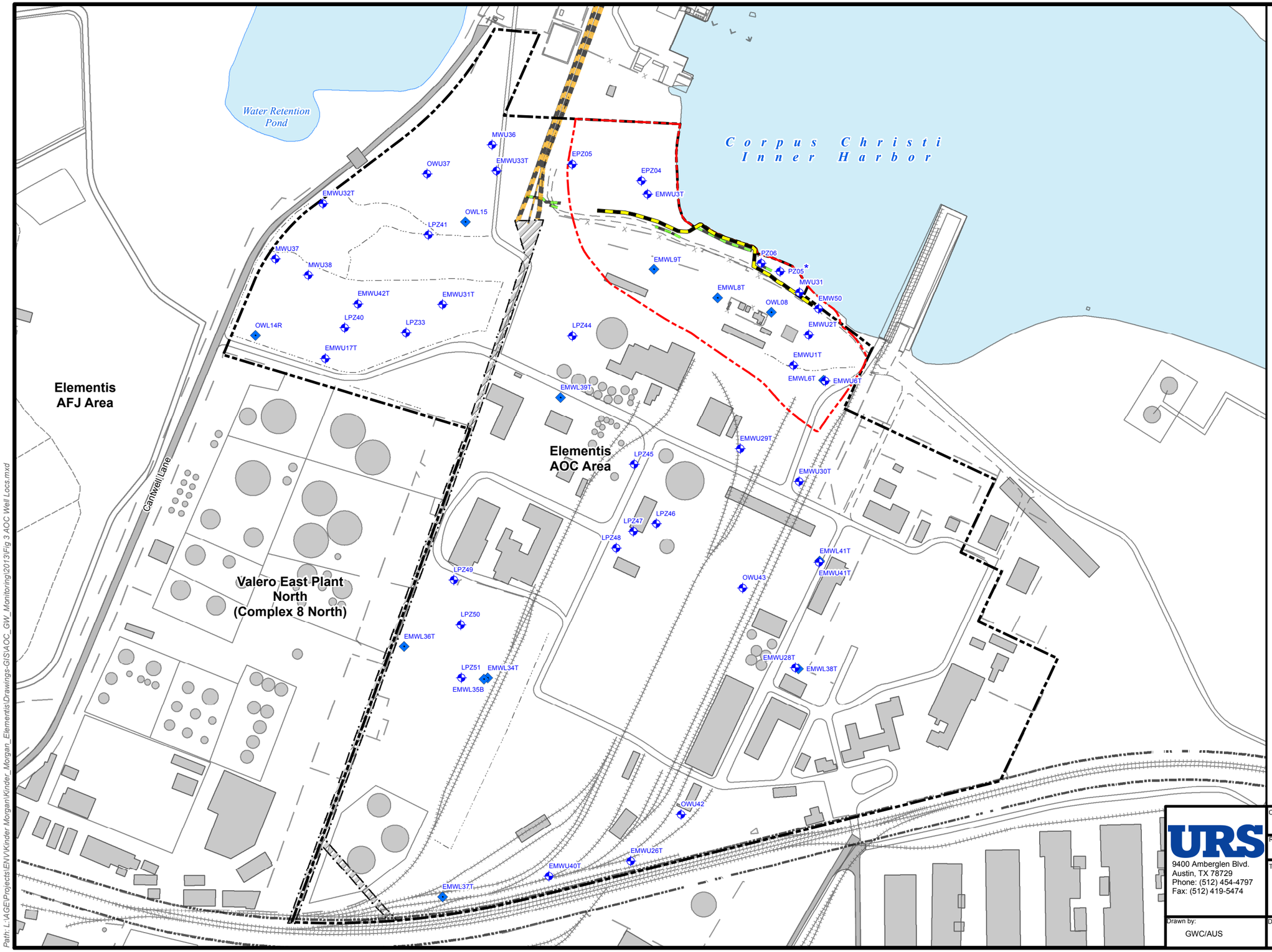
Report: AOC Annual Groundwater Monitoring Report

Title: **Facility Well Location Map**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/24/2014	Fig 2 AOC Well Loc 24x36.mxd	2



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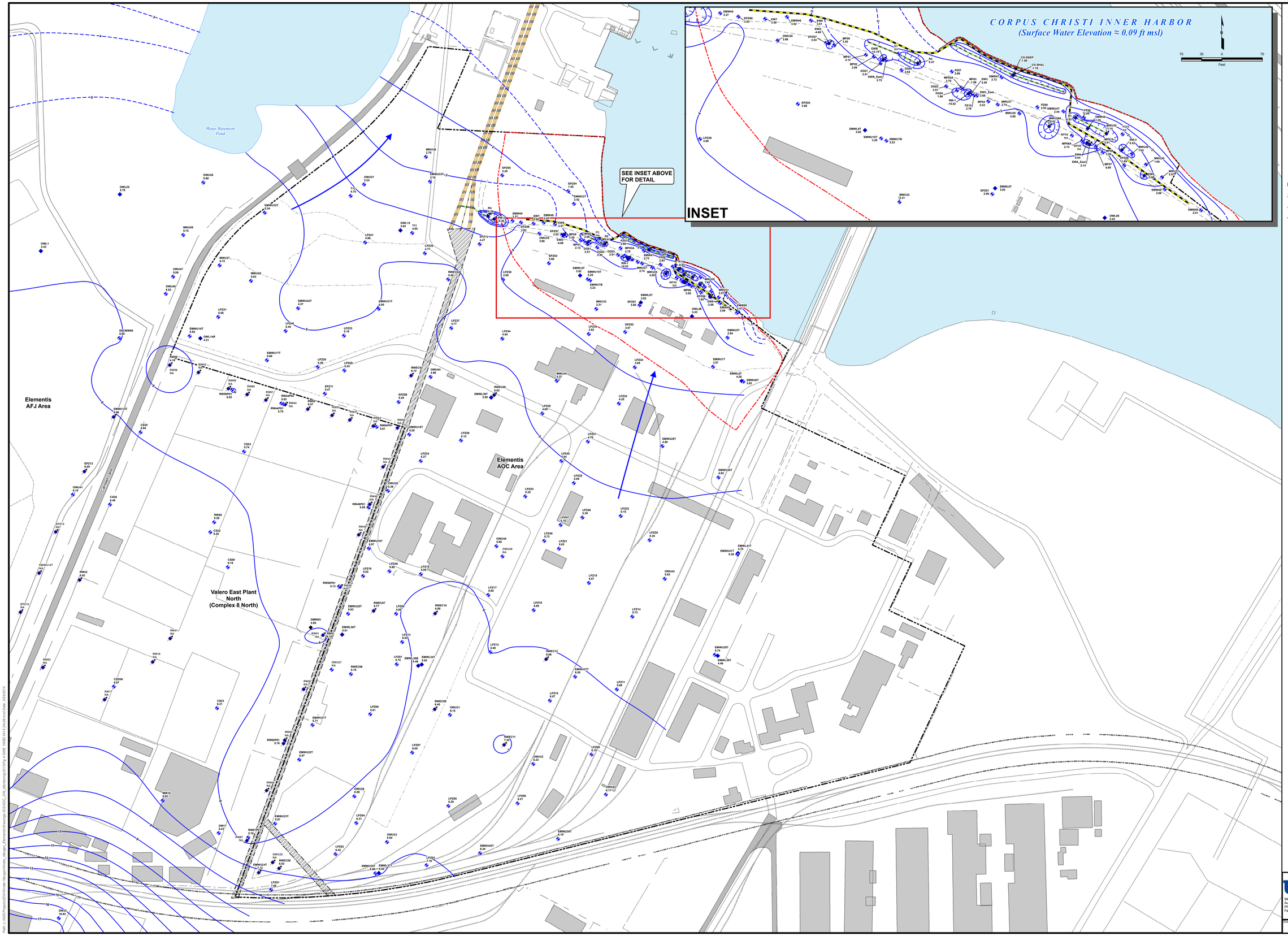
Elementis Site - Corpus Christi, Texas

Report: AOC Annual Groundwater Monitoring Report

Title: **AOC Groundwater Sample Locations**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/24/2014	Fig 3 AOC Well Locs.mxd	3

Path: L:\AGE\Projects\ENV\Kinder Morgan\Kinder_Morgan_Elementis\Drawings-GIS\AOC_GW_Monitoring\2013\Fig 3 AOC Well Locs.mxd



Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Recovery Trench
- Aboveground Pipeline
- Potentiometric Surface Contour (Dashed Where Inferred)
- Approximate Groundwater Flow Direction
- Monitor Well Location (Upper WBZ)
- Monitor Well Location (Lower WBZ)
- Monitor Well Location (Deep WBZ)
- Recovery Well Location (Upper WBZ)
- 9.37 Groundwater Elevation (ft msl)
- NA Not Applicable
- WBZ Water Bearing Zone

Notes:

1. Contour interval = 1 foot.
2. Data for wells on adjacent Valero property provided by RPS Group.
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. on April 16, 2013 at the Texas State Aquarium TCOON Station.

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N

150 75 0 150
Feet

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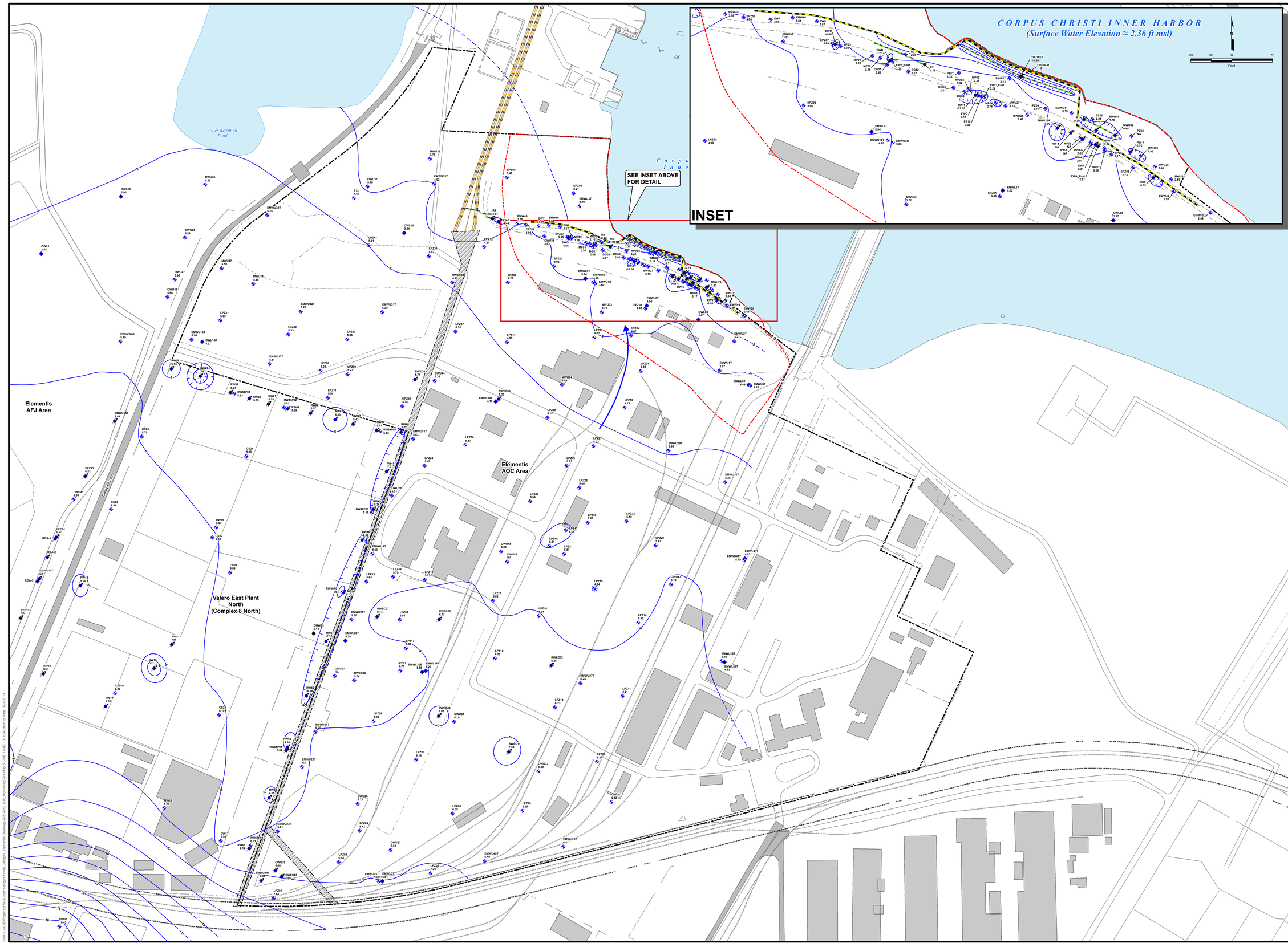
Elementis Site - Corpus Christi, Texas

Project: AOC Annual Groundwater Monitoring Report

Title: **Potentiometric Surface of the 1st WBZ (April 2013)**

Drawn by:	Date:	Job File:	Figure:
GWC/AUS	3/24/2014	Fig-4 GWE 1WBZ 0413 24x36	4



Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Recovery Trench
- Aboveground Pipeline
- 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)
- Recovery Well Location (Upper WBZ)
- 9.37 Groundwater Elevation (ft msl)
- NA Not Applicable
- WBZ Water Bearing Zone

Notes:

1. Contour interval = 1 foot.
2. Data for wells on adjacent Valero property provided by RPS Group.
3. Wells screened below the 1st WBZ were not included in the contouring of the 1st WBZ potentiometric surface.

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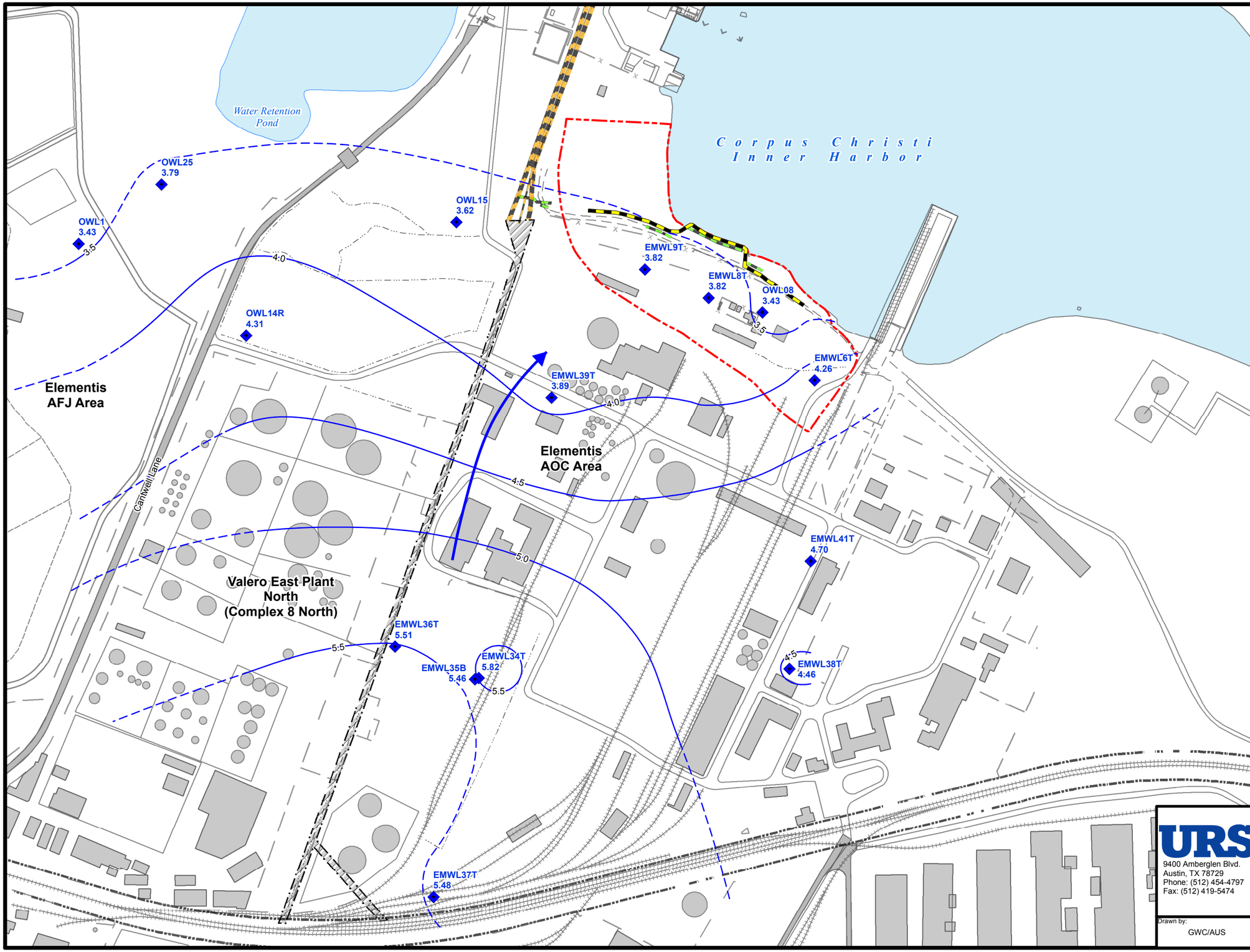
Project: AOC Annual Groundwater Monitoring Report

Title: **Potentiometric Surface of the 1st WBZ (October 2013)**

Drawn by:	Date:	Job File:	Figure:
GWC/AUS	3/24/2014	Fig 5 GWE 1WBZ 1013 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)
- 4.51 Groundwater Elevation (feet above mean sea level)

Notes:
1. Contour interval = 0.5 ft.

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300 150 0 300
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Client: El Paso Merchant Energy-Petroleum Company
Elementis Site - Corpus Christi, Texas

Report: AOC Annual Groundwater Monitoring Report

Title: **Potentiometric Surface of the 2nd WBZ (April 2013)**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/24/2014	Fig 6 GWE 2WBZ 0413.mxd	6

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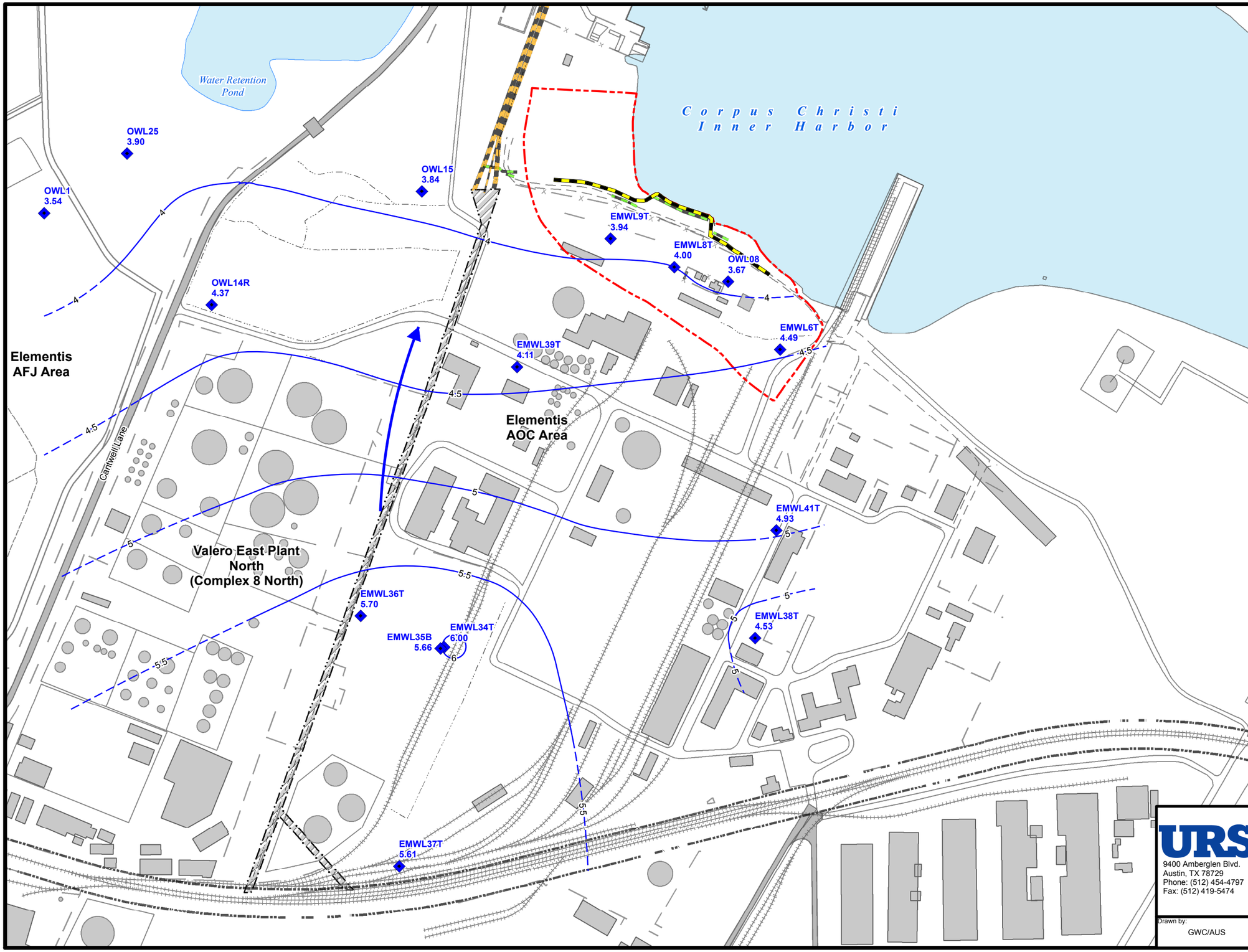

Legend

- 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 (2nd WBZ)
- 4.51 Groundwater Elevation (feet above mean sea level)

Note:
Contour interval = 0.5 feet.

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Report: AOC Annual Groundwater Monitoring Report

Title: **Potentiometric Surface of the 2nd WBZ (October 2013)**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/24/2014	Fig 7 GWE 2WBZ 1013.mxd	7

Path: L:\AGE\Projects\ENV\Kinder Morgan\Kinder_Morgan_Elementis\Drawings-GIS\AOC_GW_Monitoring\2013\Fig 7 GWE 2WBZ 1013.mxd

Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Recovery Trench
- Aboveground Pipeline
- Monitor Well Location (Upper WBZ)
- Monitor Well Location (Lower WBZ)
- Monitor Well Location (Deep WBZ)
- Recovery Well Location (Upper WBZ)
- 3.78 LNAPL Thickness (feet)
- 5.81 Benzene Concentration (mg/L)
- <1.28 DTB→ LNAPL Thickness ≥ Value Shown Because Well Total Depth is Less Than Depth to Groundwater
- Extent of Dissolved Phase Benzene Plume (0.0708 mg/L) (Dashed Where Inferred)

LNAPL Thickness April, 2013

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

Notes:
1. Contour interval = 1 ft.
2. LNAPL thickness and dissolved benzene concentration data for this figure are presented in Table 3 and Table 6, respectively.
3. All analytical results are reported in milligrams per liter (mg/L).
4. <0.0002: The analyte was analyzed for, but was not detected.
5. 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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Client: El Paso Merchant Energy-Petroleum Company
Elementis Site - Corpus Christi, Texas

Project: AOC Annual Groundwater Monitoring Report

Title: **Extent of LNAPL and Dissolved Phase Benzene in 1st WBZ (April 2013)**

Drawn by:	Date:	Job File:	Figure:
GWC/AUS	3/24/2014	Fig 8 LNAPL 1WBZ 0413 24x36	8

Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Barrier Wall
- Recovery Trench
- Aboveground Pipeline
- Monitor Well Location (Upper WBZ)
- Monitor Well Location (Lower WBZ)
- Monitor Well Location (Deep WBZ)
- Total Fluid Recovery Well Location (Upper WBZ)
- 3.78 LNAPL Thickness (feet)
- 5.81 Benzene Concentration (mg/L)
- NA Not Analyzed
- Extent of Dissolved Phase Benzene Plume (0.0708 mg/L) (Dashed Where Inferred)

LNAPL Thickness October, 2013

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

Notes:

1. *Contour interval = 1 ft.*
2. *LNAPL thickness and dissolved benzene concentration data for this figure are presented in Table 3 and Table 6, respectively.*
3. *All analytical results are reported in milligrams per liter (mg/L).*
4. *J: The analyte was positively identified, the quantitation is an estimation.*
5. *<0.0002 U: The analyte was analyzed for, but was not detected.*
6. ** Benzene concentration data from samples collected in January 2014.*

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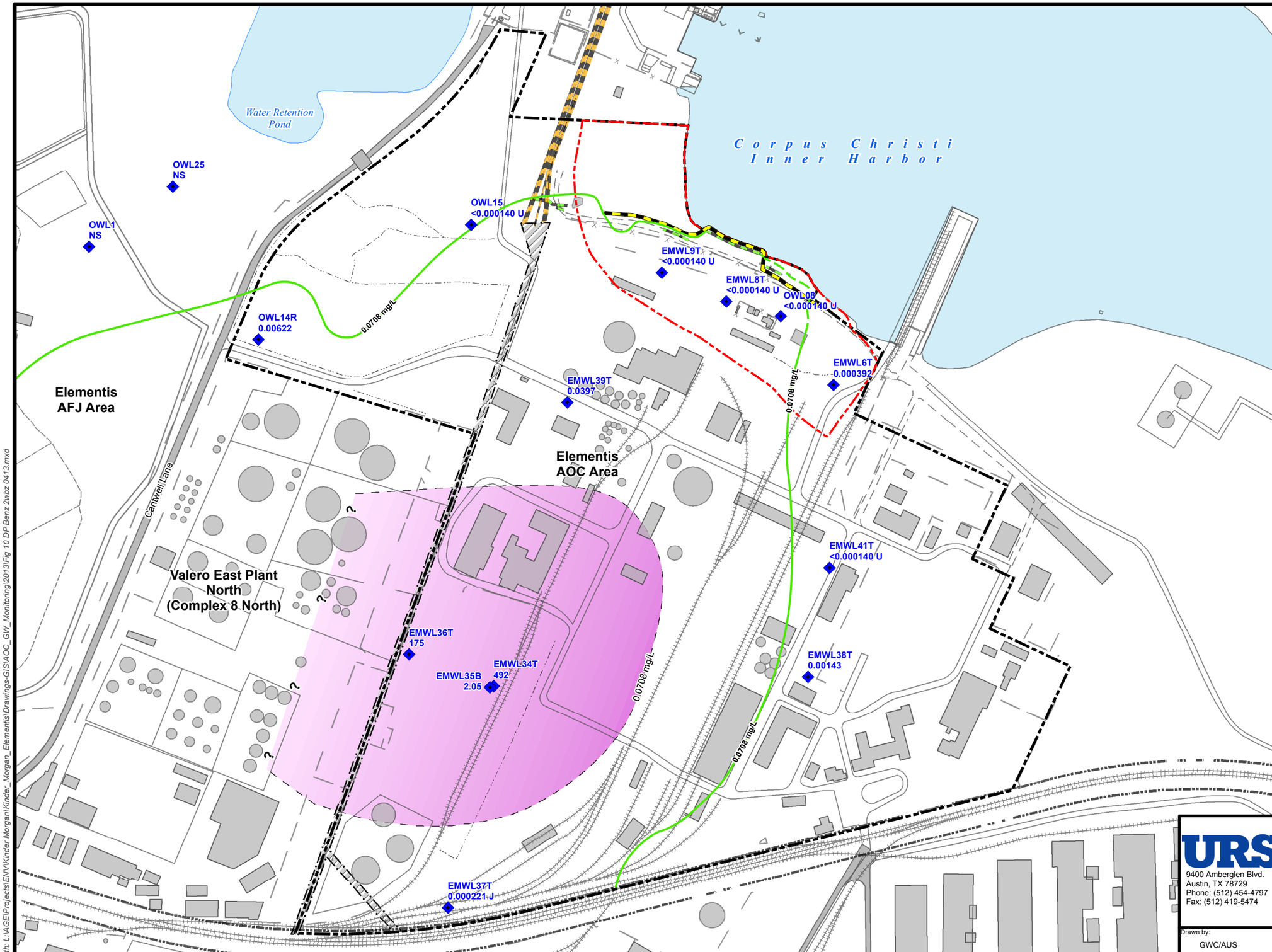
Client: El Paso Merchant Energy-Petroleum Company
Elementis Site - Corpus Christi, Texas

Project: AOC Annual Groundwater Monitoring Report

Title: **Extent of LNAPL and Dissolved Phase Benzene in 1st WBZ (October 2013)**

Drawn by: GWC/AUS | Date: 3/24/2014 | Job Name: Fig 9 LNAPL 1WBZ 1013 24x36 | Figure: 9



Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Estimated Extent of Dissolved Phase Benzene in 2nd WBZ
- Barrier Wall
- Recovery Trench
- Aboveground Pipeline
- Extent of Dissolved Phase Benzene Plume (1st WBZ) (0.0708 mg/L) (Dashed Where Inferred)
- Monitor Well Location (2nd WBZ)
- 4.08 Benzene Concentration (mg/L)

Notes:
1. *<0.0002U: The analyte was analyzed for, but was not detected.*
2. *NS: Not sampled.*
3. *Analytical results are presented in Table 6.*

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300 150 0 300
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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 (April 2013)**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/24/2014	Fig 10 DP Benz 2wbz 0413.mxd	10

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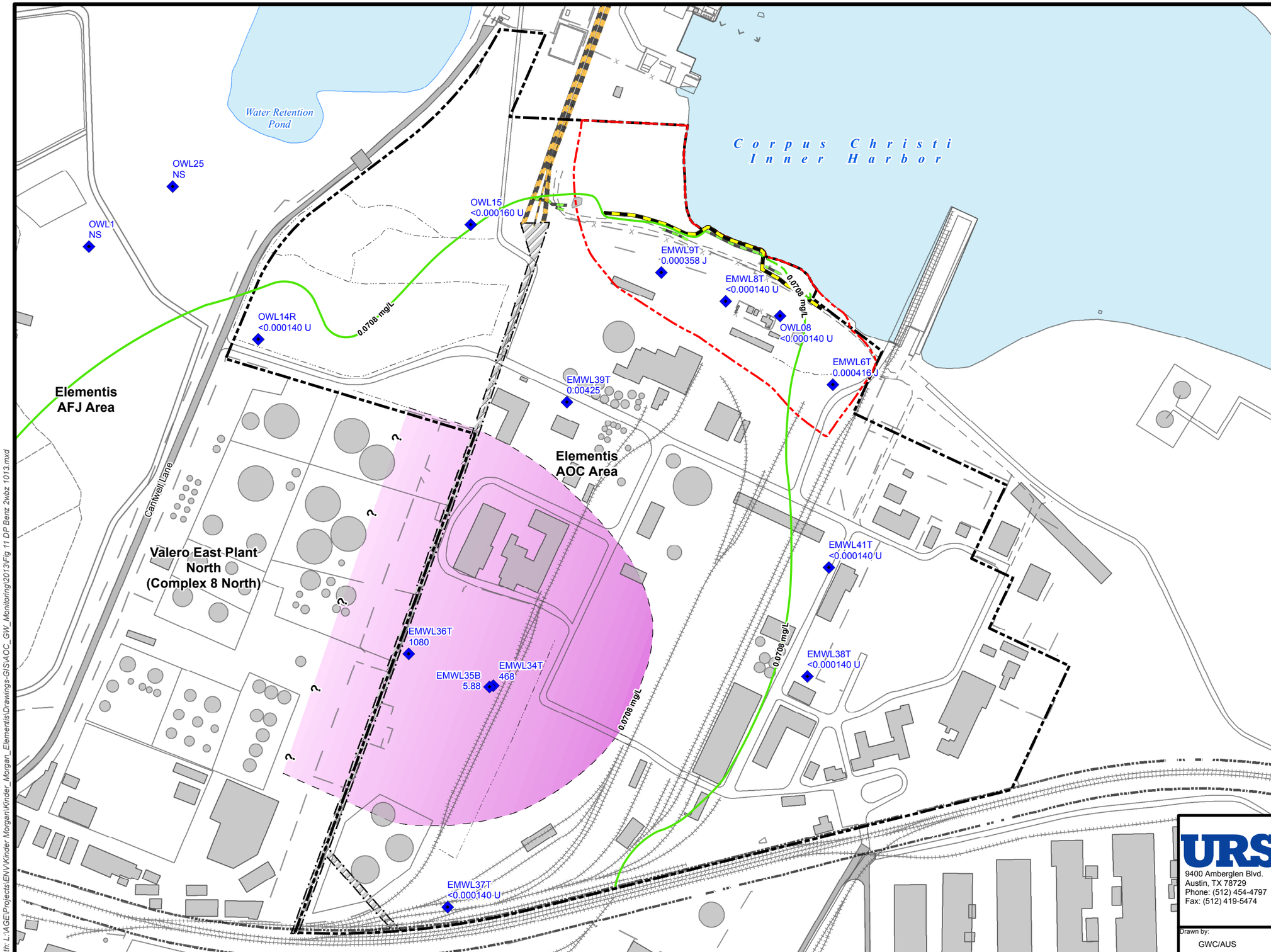

Legend

- Elementis AOC Area
- IM Area
- Approximate Location of Pipeline Corridor
- Estimated Extent of Dissolved Phase Benzene in 2nd WBZ
- Barrier Wall
- Recovery Trench
- Aboveground Pipeline
- Extent of Dissolved Phase Benzene Plume (1st WBZ) (0.0708 mg/L) (Dashed Where Inferred)
- Monitor Well Location (Lower WBZ)
- 4.08 Benzene Concentration (mg/L)

Notes:
1. *<0.000140 U: The analyte was analyzed for, but was not detected.*
2. *NS: Not sampled.*
3. *Analytical results are presented in Table 6.*

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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 2013)**

Drawn by:	Date:	GIS File:	Figure:
GWC/AUS	3/24/2014	Fig 11 DP Benz 2wbz 1013.mxd	11

Path: L:\AGE\Projects\ENV\Kinder Morgan\Kinder_Morgan_Elementis\Drawings-GIS\AOC_GW_Monitoring\2013\Fig 11 DP Benz 2wbz 1013.mxd

Appendix A

Data Usability Summaries and Laboratory Reports

DUS for the Semiannual AOC Groundwater Sampling Events
April 2013

Data Usability Summary for the Semiannual AOC Groundwater Sampling Event – April 2013

El Paso Merchant Energy-Petroleum Company/Elementis
Corpus Christi, Texas

July 2013

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 2013

This Data Usability Summary describes the data quality for groundwater results from samples collected during the April 2013 Administrative Order of 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 37 samples, 3 field duplicates, and 4 trip blanks were collected. The samples were collected from 17 April to 26 April 2013 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 IDs

Sample ID	Laboratory ID	Date Sampled	Benzene SW8260B
AOC-EMW50-063	560-39534-14	4/23/2013	X
AOC-EMWL6T-100	560-39390-4	4/17/2013	X
AOC-EMWL8T-120	560-39390-1	4/17/2013	X
AOC-EMWL9T-120	560-39390-2	4/17/2013	X
AOC-EMWL34T-090	560-39534-4	4/22/2013	X
AOC-EMWL35B-090	560-39534-5	4/22/2013	X
AOC-EMWL36T-090	560-39534-7	4/22/2013	X
AOC-EMWL38T-090	560-39390-5	4/17/2013	X
AOC-EMWL37T-090	560-69534-1	4/22/2013	X
AOC-EMWL39T-100	560-69534-2	4/22/2013	X
AOC-EMWL41T-090	560-39390-6	4/17/2013	X
AOC-EMWU1T-090	560-39390-18	4/18/2013	X
AOC-EMWU2T-130	560-39390-16	4/18/2013	X
AOC-EMWU3T-100	560-39534-8	4/23/2013	X
AOC-EMWU4T-040	560-39575-1	4/26/2013	X
AOC-EMWU6T-100	560-39390-17	4/18/2013	X
AOC-EMWU26T-060	560-39390-9	4/18/2013	X
AOC-EMWU28T-070	560-39390-11	4/18/2013	X
AOC-EMWU29T-070	560-39390-15	4/18/2013	X
AOC-EMWU30T-070	560-39390-13	4/18/2013	X
AOC-EMWU32T-080	560-39419-4	4/19/2013	X
AOC-EMWU33T-070	560-39419-2	4/18/2013	X
AOC-EMWU40T-073	560-39390-10	4/18/2013	X
AOC-EMWU41T-080	560-39390-12	4/18/2013	X
AOC-EMWU42T-070	560-39390-12	4/18/2013	X
AOC-EPZ04-110	560-39534-13	4/23/2013	X
AOC-EPZ05-110	560-39534-10	4/23/2013	X
AOC-LPZ40-050	560-39534-12	4/23/2013	X

Table 1. Cross-Reference of Sample and Laboratory IDs (Continued)

Sample ID	Laboratory ID	Date Sampled	Benzene SW8260B
AOC-LPZ41-060	560-39534-11	4/23/2013	X
AOC-MWU31-090	560-39534-15	4/23/2013	X
AOC-MWU36-090	560-39419-3	4/19/2013	X
AOC-MWU37-070	560-39419-5	4/19/2013	X
AOC-MWU38-060	560-39419-6	4/19/2013	X
AOC-OWL08-100	560-39390-3	4/17/2013	X
AOC-OWL14R-080	560-39390-7	4/17/2013	X
AOC-PZ05-060	560-39534-16	4/23/2013	X
AOC-PZ06-040	560-39534-18	4/23/2013	X
Field Duplicates			
AOC-EMWU30T-071	560-39390-14	4/18/2013	X
AOC-EMWL35B-091	560-39534-6	4/22/2013	X
AOC-PZ05-061	560-39534-17	4/23/2013	X
Trip Blanks			
AOC-0413-TB01	560-39390-8	4/17/2013	X
AOC-0413-TB02	560-39419-1	4/19/2013	X
AOC-0413-TB03	560-69534-3	4/22/2013	X
Trip Blank	560-39575-2	4/26/2013	X

Sample IDs ending in -xx3 are client-specified Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples.
ID - Identification.
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 2013 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

Forty-four samples 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.

Sample Receipt

Samples AOC-EMWU4T-040 was submitted to the laboratory without its sample ID on the label of chain-of-custody form. It was identified by project personnel and logged into the laboratory's system with the correct ID.

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			
	LOCATION ID			
	SAMPLE ID			
	DATE SAMPLED			
PARAMETER	EP EMW-50 AOC-EMW50-063 23-APR-13	OffELM_O EMW-L34T AOC-EMWL34T-090 22-APR-13	OffELM_O EMW-L35B AOC-EMWL35B-090 22-APR-13	OffELM_O EMW-L35B AOC-EMWL35B-091 Dup of AOC-EMWL35B-090 22-APR-13
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.140)[1]	492000 (420)[3000]	2050 (2.80)[20]	2720 (2.80)[20]

SITE ID	OffELM_O				OffELM_O				OffELM_O				OffELM_O			
LOCATION ID	EMW-L36T				EMW-L37T				EMW-L38T				EMW-L39T			
SAMPLE ID	AOC-EMWL36T-090				AOC-EMWL37T-090				AOC-EMWL38T-090				AOC-EMWL39T-100			
DATE SAMPLED	22-APR-13				22-APR-13				17-APR-13				22-APR-13			
PARAMETER																
SW8260B - Volatile Organic Compounds (ug/L)																
Benzene	175000	(280	)[2000]		0.221	J (0.140	)[1]		1.43	(0.140	)[1]		39.7	(0.140	)[1]	

PARAMETER	SITE ID LOCATION ID SAMPLE ID DATE SAMPLED																
	EP EMW-L41T AOC-EMWL41T-090 17-APR-13				EP EMW-L6T AOC-EMWL6T-100 17-APR-13				OffELM_O EMW-L8T AOC-EMWL8T-120 17-APR-13				OffELM_O EMW-L9T AOC-EMWL9T-120 17-APR-13			
SW8260B - Volatile Organic Compounds (ug/L)																
Benzene	ND	U	(0.140	)[1]	0.392	J	(0.140	)[1]	ND	U	(0.140	)[1]	ND	U	(0.140	)[1]

PARAMETER	SITE ID LOCATION ID SAMPLE ID DATE SAMPLED														
	OffELM_O EMW-U1T AOC-EMWU1T-090 18-APR-13				OffELM_O EMW-U26T AOC-EMWU26T-060 18-APR-13				OffELM_O EMW-U28T AOC-EMWU28T-070 18-APR-13				OffELM_O EMW-U29T AOC-EMWU29T-070 18-APR-13		
SW8260B - Volatile Organic Compounds (ug/L)															
Benzene	ND	U	(0.140	)[1]	ND	U	(0.140	)[1]	ND	U	(0.140	)[1]	29700	(28.0	)[200]

SITE ID	OffELM_O	OffELM_O	OffELM_O	OffELM_O
LOCATION ID	EMW-U2T	EMW-U30T	EMW-U30T	EMW-U32T
SAMPLE ID	AOC-EMWU2T-130	AOC-EMWU30T-070	AOC-EMWU30T-071 Dup of AOC-EMWU30T-070	AOC-EMWU32T-080
DATE SAMPLED	18-APR-13	18-APR-13	18-APR-13	19-APR-13
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	0.198 J (0.140)[1]	ND U (0.140)[1]	ND U (0.140)[1]	16.8 (0.700)[5]

SITE ID	OffELM_O	OffELM_O	EP	EP
LOCATION ID	EMW-U33T	EMW-U3T	EMW-U40T	EMW-U41T
SAMPLE ID	AOC-EMWU33T-070	AOC-EMWU3T-100	AOC-EMWU40T-073	AOC-EMWU41T-080
DATE SAMPLED	18-APR-13	23-APR-13	18-APR-13	18-APR-13
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (70.0)[500]	ND U (14.0)[100]	61600 (140)[1000]	ND U (0.140)[1]

PARAMETER	SITE ID LOCATION ID SAMPLE ID DATE SAMPLED																
	EP EMW-U42T AOC-EMWU42T-070 23-APR-13				EP EMW-U4T AOC-EMWU4T-040 26-APR-13				OffELP_O EMW-U6T AOC-EMWU6T-100 18-APR-13				OffELM_O EPZ-04 AOC-EPZ04-110 23-APR-13			
SW8260B - Volatile Organic Compounds (ug/L)																
Benzene	ND	U	(0.700	)[5]	957000	(1400	)[10000]		ND	U	(0.140	)[1]	ND	U	(0.140	)[1]

PARAMETER	SITE ID LOCATION ID SAMPLE ID DATE SAMPLED										
	OffELM_O EPZ-05 AOC-EPZ05-110 23-APR-13				EP LPZ40 AOC-LPZ40-050 23-APR-13			EP LPZ41 AOC-LPZ41-060 23-APR-13			OffELM_O MW-U31 AOC-MWU31-090 23-APR-13		
SW8260B - Volatile Organic Compounds (ug/L)												
Benzene	ND	U	(0.140	)[1]	3.09	(0.140	)[1]	1.18	(0.140	)[1]	5550	(7.00	)[50]

PARAMETER	SITE ID LOCATION ID SAMPLE ID DATE SAMPLED																
	OffELM_O MWU36 AOC-MWU36-090 19-APR-13					OffELM_O MWU37 AOC-MWU37-070 19-APR-13					OffELM_O MW-U38 AOC-MWU38-060 19-APR-13					OffELM_O OW-L08 AOC-OWL08-100 17-APR-13				
SW8260B - Volatile Organic Compounds (ug/L)																				
Benzene	ND	U	(2.80	)[20]		ND	U	(0.140	)[1]		28.2		(0.700	)[5]		ND	U	(0.140	)[1]	

SITE ID															
LOCATION ID															
SAMPLE ID															
DATE SAMPLED															
	OffELM_O			OffELM_O			OffELM_O			OffELM_O		
	OW-L14R			PZ-05			PZ-05			PZ-06		
	AOC-OWL14R-080			AOC-PZ05-060			AOC-PZ05-061 Dup of AOC-PZ05-060			AOC-PZ06-040		
	17-APR-13			23-APR-13			23-APR-13			23-APR-13		
PARAMETER												
SW8260B - Volatile Organic Compounds (ug/L)												
Benzene	6.22	(0.140	)[1]	ND	U (0.140	)[1]	ND	U (0.140	)[1]	522000	(700	)[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: 560-39390-1
Client Project/Site: Elementis AOC Groundwater/April 2013

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

Attn: Ms. Jean Youngerman

Authorized for release by:
4/27/2013 12:09:39 PM

Timothy Kellogg
Lab Director
tim.kellogg@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/April 2013

TestAmerica Job ID: 560-39390-1

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.

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)
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)
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)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Corpus Christi
TRRP Data Package Cover Page

Job Number: 560-39390-1

Project Name/Number: Elementis AOC Groundwater/April 2013

This Data Package consists of:

This signature page, the laboratory review checklist, and the following Reportable Data:

- ☒ R1 Field Chain-of-Custody Form
- ☒ 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
  - d) The laboratory's LCS QC limits
- ☒ R7 Test Reports for 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 sample,
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☒ R8 Laboratory analytical duplicates (if applicable) recovery and precision, including:
  - 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 limit (MQL) 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 the 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 the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory is NELAC accredited under 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 has been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm, to the best of my knowledge, that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld."

Timothy L. Kellogg	Timothy L. Kellogg	4/27/2013
Name (printed)	Signature	Date

Laboratory Director
Official Title (printed)

LRC Date: April 27, 2013	Laboratory Job Number: 560-39390-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	**OI**	**CHAIN-OF-CUSTODY (C-O-C)**					
		1) Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				1
		2) Were all departures from standard conditions described in an exception report or case narrative?	X				
R2	**OI**	**SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	**OI**	**TEST REPORTS**					
		1) Were all samples prepared and analyzed within holding time?	X				
		2) Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample quantitation limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035			X		
		9) If required for the project, TICs reported?			X		
R4	**O**	**SURROGATE RECOVERY DATA**					
		1) Were surrogates added prior to extraction?	X				
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	**OI**	**TEST REPORTS/SUMMARY FORMS FOR BLANK SAMPLES**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations <MQL?	X				
R6	**OI**	**LABORATORY CONTROL SAMPLES (LCS)**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits?	X				
R7	**OI**	**MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD) DATA**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	**OI**	**ANALYTICAL DUPLICATE DATA**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	**OI**	**METHOD QUANTITATION LIMITS (MQLs)**					
		1) Are the MQLs for each method analyte listed and included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCS included in the laboratory data package?	X				

LRC Date: April 27, 2013	Laboratory Job Number: 560-39390-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R10	**OI**	**OTHER PROBLEMS/ANOMALIES**					
		1) Are all known problems/anomalies/special conditions noted in this LRC, ER, or case narrative?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
S1	**OI**	**INITIAL CALIBRATION (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within the QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	**OI**	**INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV and CCV) AND CONTINUING CALIBRATION BLANK (CCB)**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analytes within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	X				
S3	**O**	**MASS SPECTRAL TUNING**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	**O**	**INTERNAL STANDARDS (IS)**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	**OI**	**RAW DATA (NELAC SECTION 5.5.10)**					
		1) Were the raw data (e.g. chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	**O**	**DUAL COLUMN CONFIRMATION**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	**O**	**TENTATIVELY IDENTIFIED COMPOUNDS (TICs)**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	**I**	**INTERFERENCE CHECK SAMPLE (ICS) RESULTS**					
		1) Were percent recoveries within method QC limits?			X		
S9	**I**	**SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	**OI**	**METHOD DETECTION LIMIT (MDL) STUDIES**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCS?	X				
S11	**OI**	**PROFICIENCY TEST REPORTS**					
		1) Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	**OI**	**STANDARDS DOCUMENTATION**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	**OI**	**COMPOUND/ANALYTE IDENTIFICATION PROCEDURES**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	**OI**	**DEMONSTRATION OF ANALYST COMPETENCY (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5?	X				

LRC Date: April 27, 2013	Laboratory Job Number: 560-39390-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

		2) Is documentation of the analyst's competency up-to-date and on file?	X				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S15	**OI**	**VERIFICATION/VALIDATION DOCUMENTATION FOR METHODS (NELAC CHAPTER 5)**					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	**OI**	**LABORATORY STANDARD OPERATING PROCEDURES (SOPs)**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

EXCEPTION REPORTS

ER#[5]	DESCRIPTION
1	Sample Receipt: The samples were received on 4/18/2013 4:35 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4° C.

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable)
3 NA = Not applicable
4 NR = Not reviewed
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked)

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39390-1

Client Sample ID: AOC-EMWL8T-120

Lab Sample ID: 560-39390-1
Date Collected: 04/17/13 08:45
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 18:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/20/13 18:21*	*1*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*04/20/13 18:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 130*		*04/20/13 18:21*	*1*

Client Sample ID: AOC-EMWL9T-120

Lab Sample ID: 560-39390-2
Date Collected: 04/17/13 09:50
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*04/20/13 18:47*	*1*
Dibromofluoromethane (Surr)	*98*		*70 - 130*		*04/20/13 18:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*04/20/13 18:47*	*1*

Client Sample ID: AOC-OWL08-100

Lab Sample ID: 560-39390-3
Date Collected: 04/17/13 11:00
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 19:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/20/13 19:12*	*1*
Dibromofluoromethane (Surr)	*101*		*70 - 130*		*04/20/13 19:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*04/20/13 19:12*	*1*

Client Sample ID: AOC-EMWL6T-100

Lab Sample ID: 560-39390-4
Date Collected: 04/17/13 11:45
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.392**	**J**	1.00	0.140	ug/L			04/20/13 19:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/20/13 19:37*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 130*		*04/20/13 19:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*04/20/13 19:37*	*1*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39390-1

Client Sample ID: AOC-EMWL38T-090

Lab Sample ID: 560-39390-5
Date Collected: 04/17/13 14:00
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.43		1.00	0.140	ug/L			04/20/13 20:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/20/13 20:03*	*1*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*04/20/13 20:03*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*04/20/13 20:03*	*1*

Client Sample ID: AOC-EMWL41T-090

Lab Sample ID: 560-39390-6
Date Collected: 04/17/13 14:50
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 20:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/20/13 20:28*	*1*
Dibromofluoromethane (Surr)	*101*		*70 - 130*		*04/20/13 20:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*		*04/20/13 20:28*	*1*

Client Sample ID: AOC-OWL14R-080

Lab Sample ID: 560-39390-7
Date Collected: 04/17/13 16:50
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	6.22		1.00	0.140	ug/L			04/20/13 20:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/20/13 20:53*	*1*
Dibromofluoromethane (Surr)	*98*		*70 - 130*		*04/20/13 20:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*04/20/13 20:53*	*1*

Client Sample ID: AOC-0413-TB01

Lab Sample ID: 560-39390-8
Date Collected: 04/17/13 17:00
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 21:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/20/13 21:18*	*1*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*04/20/13 21:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*04/20/13 21:18*	*1*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39390-1

Client Sample ID: AOC-EMWU26T-060

Lab Sample ID: 560-39390-9
Date Collected: 04/18/13 08:49
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 21:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/20/13 21:44*	*1*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*04/20/13 21:44*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*		*04/20/13 21:44*	*1*

Client Sample ID: AOC-EMWU40T-073

Lab Sample ID: 560-39390-10
Date Collected: 04/18/13 09:50
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**61600**		1.00	0.140	ug/L			04/20/13 17:56	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*04/20/13 17:56*	*1000*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*04/20/13 17:56*	*1000*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 130*		*04/20/13 17:56*	*1000*

Client Sample ID: AOC-EMWU28T-070

Lab Sample ID: 560-39390-11
Date Collected: 04/18/13 10:55
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 22:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/20/13 22:09*	*1*
Dibromofluoromethane (Surr)	*101*		*70 - 130*		*04/20/13 22:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 130*		*04/20/13 22:09*	*1*

Client Sample ID: AOC-EMWU41T-080

Lab Sample ID: 560-39390-12
Date Collected: 04/18/13 11:35
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 22:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*70 - 130*		*04/20/13 22:34*	*1*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*04/20/13 22:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 130*		*04/20/13 22:34*	*1*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39390-1

Client Sample ID: AOC-EMWU30T-070

Lab Sample ID: 560-39390-13
Date Collected: 04/18/13 12:20
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 22:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/20/13 22:59*	*1*
Dibromofluoromethane (Surr)	*101*		*70 - 130*		*04/20/13 22:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 130*		*04/20/13 22:59*	*1*

Client Sample ID: AOC-EMWU30T-071

Lab Sample ID: 560-39390-14
Date Collected: 04/18/13 12:20
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 23:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/20/13 23:25*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*04/20/13 23:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 130*		*04/20/13 23:25*	*1*

Client Sample ID: AOC-EMWU29T-070

Lab Sample ID: 560-39390-15
Date Collected: 04/18/13 13:45
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**29700**		1.00	0.140	ug/L			04/20/13 23:50	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/20/13 23:50*	*200*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*04/20/13 23:50*	*200*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 130*		*04/20/13 23:50*	*200*

Client Sample ID: AOC-EMWU2T-130

Lab Sample ID: 560-39390-16
Date Collected: 04/18/13 14:40
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.198**	**J**	1.00	0.140	ug/L			04/21/13 00:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*04/21/13 00:15*	*1*
Dibromofluoromethane (Surr)	*105*		*70 - 130*		*04/21/13 00:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 130*		*04/21/13 00:15*	*1*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39390-1

Client Sample ID: AOC-EMWU6T-100

Lab Sample ID: 560-39390-17
Date Collected: 04/18/13 15:25
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/21/13 00:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*04/21/13 00:40*	*1*
Dibromofluoromethane (Surr)	*104*		*70 - 130*		*04/21/13 00:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 130*		*04/21/13 00:40*	*1*

Client Sample ID: AOC-EMWU1T-090

Lab Sample ID: 560-39390-18
Date Collected: 04/18/13 16:08
Matrix: Water
Date Received: 04/18/13 16:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/21/13 01:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*70 - 130*		*04/21/13 01:05*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*04/21/13 01:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 130*		*04/21/13 01:05*	*1*

QC Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39390-1

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

Lab Sample ID: MB 560-86897/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86897

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 17:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/20/13 17:31*	*1*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*04/20/13 17:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*04/20/13 17:31*	*1*

Lab Sample ID: LCS 560-86897/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86897

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	24.88		ug/L		100	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 130*

Lab Sample ID: 560-39390-10 MS — **Client Sample ID: AOC-EMWU40T-073**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86897

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	61600		25000	85610		ug/L		96	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 130*

Lab Sample ID: 560-39390-10 MSD — **Client Sample ID: AOC-EMWU40T-073**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86897

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	61600		25000	83830		ug/L		89	70 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*101*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*

QC Association Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39390-1

GC/MS VOA

Analysis Batch: 86897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-39390-1	AOC-EMWL8T-120	Total/NA	Water	8260B	
560-39390-2	AOC-EMWL9T-120	Total/NA	Water	8260B	
560-39390-3	AOC-OWL08-100	Total/NA	Water	8260B	
560-39390-4	AOC-EMWL6T-100	Total/NA	Water	8260B	
560-39390-5	AOC-EMWL38T-090	Total/NA	Water	8260B	
560-39390-6	AOC-EMWL41T-090	Total/NA	Water	8260B	
560-39390-7	AOC-OWL14R-080	Total/NA	Water	8260B	
560-39390-8	AOC-0413-TB01	Total/NA	Water	8260B	
560-39390-9	AOC-EMWU26T-060	Total/NA	Water	8260B	
560-39390-10	AOC-EMWU40T-073	Total/NA	Water	8260B	
560-39390-10 MS	AOC-EMWU40T-073	Total/NA	Water	8260B	
560-39390-10 MSD	AOC-EMWU40T-073	Total/NA	Water	8260B	
560-39390-11	AOC-EMWU28T-070	Total/NA	Water	8260B	
560-39390-12	AOC-EMWU41T-080	Total/NA	Water	8260B	
560-39390-13	AOC-EMWU30T-070	Total/NA	Water	8260B	
560-39390-14	AOC-EMWU30T-071	Total/NA	Water	8260B	
560-39390-15	AOC-EMWU29T-070	Total/NA	Water	8260B	
560-39390-16	AOC-EMWU2T-130	Total/NA	Water	8260B	
560-39390-17	AOC-EMWU6T-100	Total/NA	Water	8260B	
560-39390-18	AOC-EMWU1T-090	Total/NA	Water	8260B	
LCS 560-86897/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-86897/8	Method Blank	Total/NA	Water	8260B	

Certification Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39390-1

Laboratory: TestAmerica Corpus Christi

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-13
Oklahoma	State Program	6	9968	08-31-13
Texas	NELAP	6	T104704210-12-8	03-31-14
USDA	Federal		P330-11-00060	02-03-14

Method Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39390-1

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/April 2013

TestAmerica Job ID: 560-39390-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-39390-1	AOC-EMWL8T-120	Water	04/17/13 08:45	04/18/13 16:35
560-39390-2	AOC-EMWL9T-120	Water	04/17/13 09:50	04/18/13 16:35
560-39390-3	AOC-OWL08-100	Water	04/17/13 11:00	04/18/13 16:35
560-39390-4	AOC-EMWL6T-100	Water	04/17/13 11:45	04/18/13 16:35
560-39390-5	AOC-EMWL38T-090	Water	04/17/13 14:00	04/18/13 16:35
560-39390-6	AOC-EMWL41T-090	Water	04/17/13 14:50	04/18/13 16:35
560-39390-7	AOC-OWL14R-080	Water	04/17/13 16:50	04/18/13 16:35
560-39390-8	AOC-0413-TB01	Water	04/17/13 17:00	04/18/13 16:35
560-39390-9	AOC-EMWU26T-060	Water	04/18/13 08:49	04/18/13 16:35
560-39390-10	AOC-EMWU40T-073	Water	04/18/13 09:50	04/18/13 16:35
560-39390-11	AOC-EMWU28T-070	Water	04/18/13 10:55	04/18/13 16:35
560-39390-12	AOC-EMWU41T-080	Water	04/18/13 11:35	04/18/13 16:35
560-39390-13	AOC-EMWU30T-070	Water	04/18/13 12:20	04/18/13 16:35
560-39390-14	AOC-EMWU30T-071	Water	04/18/13 12:20	04/18/13 16:35
560-39390-15	AOC-EMWU29T-070	Water	04/18/13 13:45	04/18/13 16:35
560-39390-16	AOC-EMWU2T-130	Water	04/18/13 14:40	04/18/13 16:35
560-39390-17	AOC-EMWU6T-100	Water	04/18/13 15:25	04/18/13 16:35
560-39390-18	AOC-EMWU1T-090	Water	04/18/13 16:08	04/18/13 16:35

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: NH / LT	Lab PM: Kellogg, Timothy L.	Carrier Tracking No(s):
Client Contact: David Zuvanich	Phone: 512-750-2597	E-Mail: tim.kellogg@testamericainc.com	
Company: El Paso Energy Corporation			
Address: 1001 Louisiana Street Room S1905B	Due Date Requested: See Work Order		
City: Houston	TAT Requested (days): See Work Order		
State, Zip: TX, 77002			
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required		
Email:	WO #: C-TEST-ELEMENTIS-017 CC06 ST09		
Project Name: Elementis AOC Groundwater	Project #: 56000079		
Site:	SSOW#:		

COC No: 560-9038-862.1
Page: Page 1 of 2
Job #: 394390

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 - (MOD) BTEX/MTBE	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N		
AOC-EMWL8T-120	4/17/13	0845	G	Water			X		Note: All VOAs Unpreserved (No HCl)
-EMWL9T-120		0950	G	Water			X		
-OWL08-100		1100	G	Water			X		
-EMWL6T-100		1145	G	Water			X		
-EMWL38T-090		1400	G	Water			X		
-EMWL41T-090		1450	G	Water			X		
-OWL14R-080		1650	G	Water			X		
-0413-TB01		1700	G	Water			X		
-EMWU26T-060	4/18/13	0849	G	Water			X		
-EMWU40T-~~060~~ 073 (JH 4/18/13)		0950	G	Water		X	X		MS/MSD
-EMWU28T-070		1055	G	Water			X		

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]	4-18-13 / 1635		[signature]	4-18-13 16:35	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: 1.2 / 1.2 IR / Seal

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: NH/LR	Lab PM: Kellogg, Timothy L.	Carrier Tracking No(s):	COC No: 560-9038-862.2
Client Contact: David Zuvanich	Phone: 512.750.2597	E-Mail: tim.kellogg@testamericainc.com		Page: Page 2 of 2
Company: El Paso Energy Corporation				Job #: 39390
Address: 1001 Louisiana Street Room S1905B	Due Date Requested: See W.O.			
City: Houston	TAT Requested (days): See W.O.			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: C-TEST-ELEMENTIS-017 CC06 ST09			
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 - (MOD) BTEX/MTBE												Total Number of containers	Special Instructions/Note:
			Preservation Code:				N													
AOC-EMWU41T-080	4/18/13	1135	G	Water			X													
-EMWU30T-070		1220	G	Water			X													
-EMWU30T-071		1220	G	Water			X													
-EMWU29T-070		1345	G	Water			X													
-EMWU2T-130		1440	G	Water			X													
-EMWU6T-100		1525	G	Water			X													
-EMWU1T-090		1608	G	Water			X													
				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]	4-18-13/1635		[signature]	4-18-13 16:35	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: 1.2 / 1.4 Seal

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-39390-1

Login Number: 39390

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Adams, Christi L

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	

Default Detection Limits

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39390-1

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

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.140	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: 560-39419-1
Client Project/Site: Elementis AOC Groundwater/April 2013

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

Attn: Ms. Jean Youngerman

Authorized for release by:
4/27/2013 12:21:01 PM

Timothy Kellogg
Lab Director
tim.kellogg@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/April 2013

TestAmerica Job ID: 560-39419-1

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
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
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)
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)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Corpus Christi
TRRP Data Package Cover Page

Job Number: 560-39419-1

Project Name/Number: Elementis AOC Groundwater/April 2013

This Data Package consists of:

This signature page, the laboratory review checklist, and the following Reportable Data:

- ☒ R1 Field Chain-of-Custody Form
- ☒ 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
  - d) The laboratory's LCS QC limits
- ☒ R7 Test Reports for 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 sample,
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☒ R8 Laboratory analytical duplicates (if applicable) recovery and precision, including:
  - 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 limit (MQL) 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 the 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 the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory is NELAC accredited under 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 has been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm, to the best of my knowledge, that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld."

Timothy L. Kellogg	Timothy L. Kellogg	4/27/2013
Name (printed)	Signature	Date

Laboratory Director
Official Title (printed)

LRC Date: April 27, 2013	Laboratory Job Number: 560-39419-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	**OI**	**CHAIN-OF-CUSTODY (C-O-C)**					
		1) Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				1
		2) Were all departures from standard conditions described in an exception report or case narrative?	X				
R2	**OI**	**SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	**OI**	**TEST REPORTS**					
		1) Were all samples prepared and analyzed within holding time?	X				
		2) Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample quantitation limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035			X		
		9) If required for the project, TICs reported?			X		
R4	**O**	**SURROGATE RECOVERY DATA**					
		1) Were surrogates added prior to extraction?	X				
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	**OI**	**TEST REPORTS/SUMMARY FORMS FOR BLANK SAMPLES**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations <MQL?	X				
R6	**OI**	**LABORATORY CONTROL SAMPLES (LCS)**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits?	X				
R7	**OI**	**MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD) DATA**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	**OI**	**ANALYTICAL DUPLICATE DATA**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	**OI**	**METHOD QUANTITATION LIMITS (MQLs)**					
		1) Are the MQLs for each method analyte listed and included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCS included in the laboratory data package?	X				

LRC Date: April 27, 2013	Laboratory Job Number: 560-39419-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R10	**OI**	**OTHER PROBLEMS/ANOMALIES**					
		1) Are all known problems/anomalies/special conditions noted in this LRC, ER, or case narrative?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				2
		3) Is the laboratory NELAC-accredited under Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
S1	**OI**	**INITIAL CALIBRATION (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within the QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	**OI**	**INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV and CCV) AND CONTINUING CALIBRATION BLANK (CCB)**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analytes within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	X				
S3	**O**	**MASS SPECTRAL TUNING**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	**O**	**INTERNAL STANDARDS (IS)**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	**OI**	**RAW DATA (NELAC SECTION 5.5.10)**					
		1) Were the raw data (e.g. chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	**O**	**DUAL COLUMN CONFIRMATION**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	**O**	**TENTATIVELY IDENTIFIED COMPOUNDS (TICs)**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	**I**	**INTERFERENCE CHECK SAMPLE (ICS) RESULTS**					
		1) Were percent recoveries within method QC limits?			X		
S9	**I**	**SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	**OI**	**METHOD DETECTION LIMIT (MDL) STUDIES**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCS?	X				
S11	**OI**	**PROFICIENCY TEST REPORTS**					
		1) Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	**OI**	**STANDARDS DOCUMENTATION**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	**OI**	**COMPOUND/ANALYTE IDENTIFICATION PROCEDURES**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	**OI**	**DEMONSTRATION OF ANALYST COMPETENCY (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5?	X				

LRC Date: April 27, 2013	Laboratory Job Number: 560-39419-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

		2) Is documentation of the analyst's competency up-to-date and on file?	X				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S15	**OI**	**VERIFICATION/VALIDATION DOCUMENTATION FOR METHODS (NELAC CHAPTER 5)**					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	**OI**	**LABORATORY STANDARD OPERATING PROCEDURES (SOPs)**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

EXCEPTION REPORTS

ER#[5]	DESCRIPTION
1	Sample Receipt: The samples were received on 4/19/2013 1:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6° C.
2	EPA Method 8260B (QC Batch #56087897, 56087901, 56087903 & 56087966) Please note that samples 560-39419-2 through 4, -6 and -8 were diluted due to the nature of the sample matrix. Elevated reporting limits (RLs) are provided.

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable)
3 NA = Not applicable
4 NR = Not reviewed
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked)

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39419-1

Client Sample ID: AOC-0413-TB02

Lab Sample ID: 560-39419-1
Date Collected: 04/19/13 06:00
Matrix: Water
Date Received: 04/19/13 13:05

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/21/13 01:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/21/13 01:31*	*1*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*04/21/13 01:31*	*1*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*04/21/13 01:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 130*		*04/21/13 01:31*	*1*

Client Sample ID: AOC-EMWU33T-070

Lab Sample ID: 560-39419-2
Date Collected: 04/18/13 17:35
Matrix: Water
Date Received: 04/19/13 13:05

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	70.0	U	1.00	0.140	ug/L			04/21/13 01:56	500

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/21/13 01:56*	*500*
4-Bromofluorobenzene (Surr)	*88*		*70 - 130*		*04/21/13 01:56*	*500*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*04/21/13 01:56*	*500*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 130*		*04/21/13 01:56*	*500*

Client Sample ID: AOC-MWU36-090

Lab Sample ID: 560-39419-3
Date Collected: 04/19/13 09:35
Matrix: Water
Date Received: 04/19/13 13:05

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.80	U	1.00	0.140	ug/L			04/23/13 14:24	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/23/13 14:24*	*20*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*04/23/13 14:24*	*20*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*04/23/13 14:24*	*20*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/23/13 14:24*	*20*

Client Sample ID: AOC-EMWU32T-080

Lab Sample ID: 560-39419-4
Date Collected: 04/19/13 10:20
Matrix: Water
Date Received: 04/19/13 13:05

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**16.8**		1.00	0.140	ug/L			04/22/13 15:25	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*04/22/13 15:25*	*5*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*04/22/13 15:25*	*5*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*		*04/22/13 15:25*	*5*
Toluene-d8 (Surr)	*102*		*70 - 130*		*04/22/13 15:25*	*5*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39419-1

Client Sample ID: AOC-MWU37-070

Lab Sample ID: 560-39419-5
Date Collected: 04/19/13 10:55
Matrix: Water
Date Received: 04/19/13 13:05

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/22/13 15:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*04/22/13 15:50*	*1*
Dibromofluoromethane (Surr)	*104*		*70 - 130*		*04/22/13 15:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 130*		*04/22/13 15:50*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/22/13 15:50*	*1*

Client Sample ID: AOC-MWU38-060

Lab Sample ID: 560-39419-6
Date Collected: 04/19/13 11:25
Matrix: Water
Date Received: 04/19/13 13:05

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**28.2**		1.00	0.140	ug/L			04/21/13 14:51	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/21/13 14:51*	*5*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*04/21/13 14:51*	*5*
Dibromofluoromethane (Surr)	*104*		*70 - 130*		*04/21/13 14:51*	*5*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 130*		*04/21/13 14:51*	*5*

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

Lab Sample ID: MB 560-86897/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86897

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/20/13 17:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/20/13 17:31*	*1*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*04/20/13 17:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*04/20/13 17:31*	*1*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/20/13 17:31*	*1*

Lab Sample ID: LCS 560-86897/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86897

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	24.88		ug/L		100	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 130*
Toluene-d8 (Surr)	*100*		*70 - 130*

Lab Sample ID: MB 560-86901/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86901

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/21/13 11:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*70 - 130*		*04/21/13 11:29*	*1*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*04/21/13 11:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 130*		*04/21/13 11:29*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/21/13 11:29*	*1*

Lab Sample ID: LCS 560-86901/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86901

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	24.20		ug/L		97	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 130*
Toluene-d8 (Surr)	*100*		*70 - 130*

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

Lab Sample ID: MB 560-86903/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86903

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/22/13 12:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*		*04/22/13 12:05*	*1*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*04/22/13 12:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*		*04/22/13 12:05*	*1*
Toluene-d8 (Surr)	*101*		*70 - 130*		*04/22/13 12:05*	*1*

Lab Sample ID: LCS 560-86903/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86903

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	23.94		ug/L		96	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*

Lab Sample ID: MB 560-86966/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86966

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/23/13 12:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*04/23/13 12:43*	*1*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*04/23/13 12:43*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*		*04/23/13 12:43*	*1*
Toluene-d8 (Surr)	*97*		*70 - 130*		*04/23/13 12:43*	*1*

Lab Sample ID: LCS 560-86966/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 86966

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	24.97		ug/L		100	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 130*
Toluene-d8 (Surr)	*100*		*70 - 130*

QC Association Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39419-1

GC/MS VOA

Analysis Batch: 86897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-39419-1	AOC-0413-TB02	Total/NA	Water	8260B	
560-39419-2	AOC-EMWU33T-070	Total/NA	Water	8260B	
LCS 560-86897/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-86897/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 86901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-39419-6	AOC-MWU38-060	Total/NA	Water	8260B	
LCS 560-86901/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-86901/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 86903

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-39419-4	AOC-EMWU32T-080	Total/NA	Water	8260B	
560-39419-5	AOC-MWU37-070	Total/NA	Water	8260B	
LCS 560-86903/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-86903/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 86966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-39419-3	AOC-MWU36-090	Total/NA	Water	8260B	
LCS 560-86966/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-86966/8	Method Blank	Total/NA	Water	8260B	

Certification Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39419-1

Laboratory: TestAmerica Corpus Christi

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-13
Oklahoma	State Program	6	9968	08-31-13
Texas	NELAP	6	T104704210-12-8	03-31-14
USDA	Federal		P330-11-00060	02-03-14

Method Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39419-1

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/April 2013

TestAmerica Job ID: 560-39419-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-39419-1	AOC-0413-TB02	Water	04/19/13 06:00	04/19/13 13:05
560-39419-2	AOC-EMWU33T-070	Water	04/18/13 17:35	04/19/13 13:05
560-39419-3	AOC-MWU36-090	Water	04/19/13 09:35	04/19/13 13:05
560-39419-4	AOC-EMWU32T-080	Water	04/19/13 10:20	04/19/13 13:05
560-39419-5	AOC-MWU37-070	Water	04/19/13 10:55	04/19/13 13:05
560-39419-6	AOC-MWU38-060	Water	04/19/13 11:25	04/19/13 13:05

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

Client Contact: David Zuvanich
Company: El Paso Energy Corporation
Address: 1001 Louisiana Street Room S1905B
City: Houston
State, Zip: TX, 77002
Phone: 512-419-5208(Tel)
Email:
Project Name: Elementis AOC Groundwater
Site:

Sampler: NH/LR
Phone: 512-750-2597
Due Date Requested: See Work Order
TAT Requested (days): See Work Order
PO #: Purchase Order not required
WO #: C-TEST-ELEMENTIS-017 CC06 ST09
Project #: 56000079
SSOW#:

Lab PM: Kellogg, Timothy L.
E-Mail: tim.kellogg@testamericainc.com
Carrier Tracking No(s):

COC No: 560-9038-862.3
Page: Page 1 of 3
Job #:
Loc: 560
39419

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 - (MOD) BTEX/MTBE	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N		
Trip Blank AOC-0413-TB02	4/14/13	0600	G	Water	N	N	X	2	Trip Blank
AOC-EMWU33T-070	4/18/13	1735	G	Water	N	N	X	3	Neat
AOC-MWU36-090	4/19/13	0935	G		N	N	X	3	HCl
AOC-EMWU32T-080	↓	1020	G		N	N	X	3	HCl
AOC-MWU37-070	↓	1055	G		W	N	X	3	HCl
AOC-MWU38-060	↓	1125	G		W	N	X	3	~~HCl~~ Neat

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]	4-19-13/1305	URS	Christi L. Adams	4/19/13 @13:05	TACC

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: IR-4 ORS 3.4°C / COOR 3.6°C

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-39419-1

Login Number: 39419

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: McDermott, Vivian

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	

Default Detection Limits

Client: URS Corporation
Project/Site: Elementis AOC Groundwater/April 2013

TestAmerica Job ID: 560-39419-1

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

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

TestAmerica

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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: 560-39534-1
TestAmerica Sample Delivery Group: April 2013
Client Project/Site: Elementis AOC Groundwater

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

Attn: Ms. Jean Youngerman

Authorized for release by:
5/3/2013 11:51:38 AM

Timothy Kellogg
Lab Director
tim.kellogg@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: 560-39534-1
SDG: April 2013

Qualifiers

GC/MS 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.
4	MS, MSD: The analyte present in the original sample is 4 times greater than 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)
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)
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)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Corpus Christi
TRRP Data Package Cover Page

Job Number: 560-39534-1
Project Name/Number: Elementis AOC Groundwater/April 2013

This Data Package consists of:

This signature page, the laboratory review checklist, and the following Reportable Data:

- ☒ R1 Field Chain-of-Custody Form
- ☒ 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
  - d) The laboratory's LCS QC limits
- ☒ R7 Test Reports for 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 sample,
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☒ R8 Laboratory analytical duplicates (if applicable) recovery and precision, including:
  - 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 limit (MQL) 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 the 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 the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory is NELAC accredited under 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 has been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm, to the best of my knowledge, that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld."

Timothy L. Kellogg	Timothy L. Kellogg	5/3/2013
Name (printed)	Signature	Date

Laboratory Director
Official Title (printed)

LRC Date: May 3, 2013	Laboratory Job Number: 560-39534-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	**OI**	**CHAIN-OF-CUSTODY (C-O-C)**					
		1) Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				1
		2) Were all departures from standard conditions described in an exception report or case narrative?	X				
R2	**OI**	**SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	**OI**	**TEST REPORTS**					
		1) Were all samples prepared and analyzed within holding time?	X				
		2) Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample quantitation limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035			X		
		9) If required for the project, TICs reported?			X		
R4	**O**	**SURROGATE RECOVERY DATA**					
		1) Were surrogates added prior to extraction?	X				
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	**OI**	**TEST REPORTS/SUMMARY FORMS FOR BLANK SAMPLES**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations <MQL?	X				
R6	**OI**	**LABORATORY CONTROL SAMPLES (LCS)**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits?	X				
R7	**OI**	**MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD) DATA**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			2
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	**OI**	**ANALYTICAL DUPLICATE DATA**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	**OI**	**METHOD QUANTITATION LIMITS (MQLs)**					
		1) Are the MQLs for each method analyte listed and included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCS included in the laboratory data package?	X				

LRC Date: May 3, 2013	Laboratory Job Number: 560-39534-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R10	**OI**	**OTHER PROBLEMS/ANOMALIES**					
		1) Are all known problems/anomalies/special conditions noted in this LRC, ER, or case narrative?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				3
		3) Is the laboratory NELAC-accredited under Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
S1	**OI**	**INITIAL CALIBRATION (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within the QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	**OI**	**INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV and CCV) AND CONTINUING CALIBRATION BLANK (CCB)**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analytes within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	X				
S3	**O**	**MASS SPECTRAL TUNING**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	**O**	**INTERNAL STANDARDS (IS)**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	**OI**	**RAW DATA (NELAC SECTION 5.5.10)**					
		1) Were the raw data (e.g. chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	**O**	**DUAL COLUMN CONFIRMATION**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	**O**	**TENTATIVELY IDENTIFIED COMPOUNDS (TICs)**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	**I**	**INTERFERENCE CHECK SAMPLE (ICS) RESULTS**					
		1) Were percent recoveries within method QC limits?			X		
S9	**I**	**SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	**OI**	**METHOD DETECTION LIMIT (MDL) STUDIES**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCS?	X				
S11	**OI**	**PROFICIENCY TEST REPORTS**					
		1) Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	**OI**	**STANDARDS DOCUMENTATION**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	**OI**	**COMPOUND/ANALYTE IDENTIFICATION PROCEDURES**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	**OI**	**DEMONSTRATION OF ANALYST COMPETENCY (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5?	X				

LRC Date: May 3, 2013	Laboratory Job Number: 560-39534-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

		2) Is documentation of the analyst's competency up-to-date and on file?	X					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S15	**OI**	**VERIFICATION/VALIDATION DOCUMENTATION FOR METHODS (NELAC CHAPTER 5)**					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	**OI**	**LABORATORY STANDARD OPERATING PROCEDURES (SOPs)**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

EXCEPTION REPORTS

ER#[5]	DESCRIPTION
1	Sample Receipt: The samples were received on 4/25/2013 12:17 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.5° C.
2	EPA Method 8260B (QC Batch #56087183) It was noted that the matrix spike (MS) recovery for 560-39534-15 was outside of the control limits. The concentration of the sample analyte(s) were greater than 4 times the concentration of the spike. The matrix spike duplicate and the laboratory control standard (LCS) recoveries were acceptable therefore the data was qualified and reported.
3	EPA Method 8260B (QC Batch #56087143 & 56087145) Please note that samples 560-39534-8 and -13 were diluted due to the nature of the sample matrix. Elevated reporting limits (RLs) are provided.

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable)
3 NA = Not applicable
4 NR = Not reviewed
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked)

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-39534-1
SDG: April 2013

Client Sample ID: AOC-EMWL37T-090

Lab Sample ID: 560-39534-1
Matrix: Water

Date Collected: 04/22/13 13:20
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.221	J	1.00	0.140	ug/L			04/26/13 16:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/26/13 16:14*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/26/13 16:14*	*1*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*04/26/13 16:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*		*04/26/13 16:14*	*1*

Client Sample ID: AOC-EMWL39T-100

Lab Sample ID: 560-39534-2
Matrix: Water

Date Collected: 04/22/13 14:15
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	39.7		1.00	0.140	ug/L			04/26/13 16:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*70 - 130*		*04/26/13 16:39*	*1*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*04/26/13 16:39*	*1*
Dibromofluoromethane (Surr)	*104*		*70 - 130*		*04/26/13 16:39*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 130*		*04/26/13 16:39*	*1*

Client Sample ID: AOC-0413-TB03

Lab Sample ID: 560-39534-3
Matrix: Water

Date Collected: 04/23/13 12:00
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/26/13 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/26/13 17:04*	*1*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*04/26/13 17:04*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*04/26/13 17:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 130*		*04/26/13 17:04*	*1*

Client Sample ID: AOC-EMWL34T-090

Lab Sample ID: 560-39534-4
Matrix: Water

Date Collected: 04/22/13 15:10
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	492000		1.00	0.140	ug/L			04/26/13 17:30	3000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*70 - 130*		*04/26/13 17:30*	*3000*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*04/26/13 17:30*	*3000*
Dibromofluoromethane (Surr)	*101*		*70 - 130*		*04/26/13 17:30*	*3000*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 130*		*04/26/13 17:30*	*3000*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-39534-1
SDG: April 2013

Client Sample ID: AOC-EMWL35B-090

Lab Sample ID: 560-39534-5
Date Collected: 04/22/13 15:50
Matrix: Water
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2050		1.00	0.140	ug/L			04/26/13 17:54	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	96		70 - 130		04/26/13 17:54	20
4-Bromofluorobenzene (Surr)	91		70 - 130		04/26/13 17:54	20
Dibromofluoromethane (Surr)	103		70 - 130		04/26/13 17:54	20
1,2-Dichloroethane-d4 (Surr)	102		70 - 130		04/26/13 17:54	20

Client Sample ID: AOC-EMWL35B-091

Lab Sample ID: 560-39534-6
Date Collected: 04/22/13 15:50
Matrix: Water
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2720		1.00	0.140	ug/L			04/26/13 18:20	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		70 - 130		04/26/13 18:20	20
4-Bromofluorobenzene (Surr)	90		70 - 130		04/26/13 18:20	20
Dibromofluoromethane (Surr)	101		70 - 130		04/26/13 18:20	20
1,2-Dichloroethane-d4 (Surr)	103		70 - 130		04/26/13 18:20	20

Client Sample ID: AOC-EMWL36T-090

Lab Sample ID: 560-39534-7
Date Collected: 04/22/13 16:40
Matrix: Water
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	175000		1.00	0.140	ug/L			04/26/13 18:45	2000

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	95		70 - 130		04/26/13 18:45	2000
4-Bromofluorobenzene (Surr)	90		70 - 130		04/26/13 18:45	2000
Dibromofluoromethane (Surr)	103		70 - 130		04/26/13 18:45	2000
1,2-Dichloroethane-d4 (Surr)	102		70 - 130		04/26/13 18:45	2000

Client Sample ID: AOC-EMWU3T-100

Lab Sample ID: 560-39534-8
Date Collected: 04/23/13 09:05
Matrix: Water
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	14.0	U	1.00	0.140	ug/L			04/26/13 19:10	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		70 - 130		04/26/13 19:10	100
4-Bromofluorobenzene (Surr)	90		70 - 130		04/26/13 19:10	100
Dibromofluoromethane (Surr)	103		70 - 130		04/26/13 19:10	100
1,2-Dichloroethane-d4 (Surr)	106		70 - 130		04/26/13 19:10	100

Client Sample ID: AOC-EPZ04-110

Lab Sample ID: 560-39534-9

Date Collected: 04/23/13 09:38

Matrix: Water

Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/26/13 19:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*04/26/13 19:35*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/26/13 19:35*	*1*
Dibromofluoromethane (Surr)	*105*		*70 - 130*		*04/26/13 19:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*04/26/13 19:35*	*1*

Client Sample ID: AOC-EPZ05-110

Lab Sample ID: 560-39534-10

Date Collected: 04/23/13 10:25

Matrix: Water

Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/26/13 20:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/26/13 20:00*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/26/13 20:00*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 130*		*04/26/13 20:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 130*		*04/26/13 20:00*	*1*

Client Sample ID: AOC-LPZ41-060

Lab Sample ID: 560-39534-11

Date Collected: 04/23/13 11:30

Matrix: Water

Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**1.18**		1.00	0.140	ug/L			04/26/13 20:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*70 - 130*		*04/26/13 20:26*	*1*
4-Bromofluorobenzene (Surr)	*88*		*70 - 130*		*04/26/13 20:26*	*1*
Dibromofluoromethane (Surr)	*107*		*70 - 130*		*04/26/13 20:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 130*		*04/26/13 20:26*	*1*

Client Sample ID: AOC-LPZ40-050

Lab Sample ID: 560-39534-12

Date Collected: 04/23/13 12:30

Matrix: Water

Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**3.09**		1.00	0.140	ug/L			04/26/13 19:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/26/13 19:18*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/26/13 19:18*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*04/26/13 19:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*		*04/26/13 19:18*	*1*

Client Sample ID: AOC-EMWU42T-070 — Lab Sample ID: 560-39534-13

Date Collected: 04/23/13 13:10 — **Matrix: Water**
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.700	U	1.00	0.140	ug/L			04/26/13 19:43	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/26/13 19:43*	*5*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*04/26/13 19:43*	*5*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*04/26/13 19:43*	*5*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*		*04/26/13 19:43*	*5*

Client Sample ID: AOC-EMW50-063 — Lab Sample ID: 560-39534-14

Date Collected: 04/23/13 14:35 — **Matrix: Water**
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/26/13 15:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/26/13 15:49*	*1*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*04/26/13 15:49*	*1*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*04/26/13 15:49*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*		*04/26/13 15:49*	*1*

Client Sample ID: AOC-MWU31-090 — Lab Sample ID: 560-39534-15

Date Collected: 04/23/13 15:20 — **Matrix: Water**
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**5550**		1.00	0.140	ug/L			04/27/13 12:20	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*04/27/13 12:20*	*50*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*04/27/13 12:20*	*50*
Dibromofluoromethane (Surr)	*104*		*70 - 130*		*04/27/13 12:20*	*50*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 130*		*04/27/13 12:20*	*50*

Client Sample ID: AOC-PZ05-060 — Lab Sample ID: 560-39534-16

Date Collected: 04/23/13 15:55 — **Matrix: Water**
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/26/13 20:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/26/13 20:51*	*1*
4-Bromofluorobenzene (Surr)	*87*		*70 - 130*		*04/26/13 20:51*	*1*
Dibromofluoromethane (Surr)	*105*		*70 - 130*		*04/26/13 20:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 130*		*04/26/13 20:51*	*1*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-39534-1
SDG: April 2013

Client Sample ID: AOC-PZ05-061

Lab Sample ID: 560-39534-17

Date Collected: 04/23/13 15:55
Matrix: Water
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/27/13 13:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/27/13 13:11*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/27/13 13:11*	*1*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*04/27/13 13:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 130*		*04/27/13 13:11*	*1*

Client Sample ID: AOC-PZ06-040

Lab Sample ID: 560-39534-18

Date Collected: 04/23/13 16:35
Matrix: Water
Date Received: 04/25/13 12:17

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**522000**		1.00	0.140	ug/L			04/27/13 13:36	5000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/27/13 13:36*	*5000*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*04/27/13 13:36*	*5000*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*04/27/13 13:36*	*5000*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 130*		*04/27/13 13:36*	*5000*

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

Lab Sample ID: MB 560-87143/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 87143

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/26/13 11:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*70 - 130*		*04/26/13 11:48*	*1*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*04/26/13 11:48*	*1*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*04/26/13 11:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*		*04/26/13 11:48*	*1*

Lab Sample ID: LCS 560-87143/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 87143

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	22.87		ug/L		91	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*70 - 130*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 130*

Lab Sample ID: MB 560-87145/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 87145

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/26/13 15:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*04/26/13 15:22*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/26/13 15:22*	*1*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*04/26/13 15:22*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*		*04/26/13 15:22*	*1*

Lab Sample ID: LCS 560-87145/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 87145

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	24.09		ug/L		96	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 130*

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

Lab Sample ID: 560-39534-14 MS — **Client Sample ID: AOC-EMW50-063**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 87145

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.140	U	25.0	25.86		ug/L		103	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 130*

Lab Sample ID: 560-39534-14 MSD — **Client Sample ID: AOC-EMW50-063**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 87145

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	26.53		ug/L		106	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*

Lab Sample ID: MB 560-87183/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 87183

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/27/13 11:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*70 - 130*		*04/27/13 11:56*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*04/27/13 11:56*	*1*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*04/27/13 11:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 130*		*04/27/13 11:56*	*1*

Lab Sample ID: LCS 560-87183/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 87183

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*
Toluene-d8 (Surr)	*97*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*98*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 130*

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

Lab Sample ID: 560-39534-15 MS — **Client Sample ID: AOC-MWU31-090**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 87183

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	5550		1250	6224	4	ug/L		54	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*70 - 130*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 130*

Lab Sample ID: 560-39534-15 MSD — **Client Sample ID: AOC-MWU31-090**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 87183

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	5550		1250	6706	4	ug/L		92	70 - 130	7	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*96*		*70 - 130*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*98*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 130*

QC Association Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-39534-1
SDG: April 2013

GC/MS VOA

Analysis Batch: 87143

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-39534-12	AOC-LPZ40-050	Total/NA	Water	8260B	
560-39534-13	AOC-EMWU42T-070	Total/NA	Water	8260B	
LCS 560-87143/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-87143/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 87145

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-39534-1	AOC-EMWL37T-090	Total/NA	Water	8260B	
560-39534-2	AOC-EMWL39T-100	Total/NA	Water	8260B	
560-39534-3	AOC-0413-TB03	Total/NA	Water	8260B	
560-39534-4	AOC-EMWL34T-090	Total/NA	Water	8260B	
560-39534-5	AOC-EMWL35B-090	Total/NA	Water	8260B	
560-39534-6	AOC-EMWL35B-091	Total/NA	Water	8260B	
560-39534-7	AOC-EMWL36T-090	Total/NA	Water	8260B	
560-39534-8	AOC-EMWU3T-100	Total/NA	Water	8260B	
560-39534-9	AOC-EPZ04-110	Total/NA	Water	8260B	
560-39534-10	AOC-EPZ05-110	Total/NA	Water	8260B	
560-39534-11	AOC-LPZ41-060	Total/NA	Water	8260B	
560-39534-14	AOC-EMW50-063	Total/NA	Water	8260B	
560-39534-14 MS	AOC-EMW50-063	Total/NA	Water	8260B	
560-39534-14 MSD	AOC-EMW50-063	Total/NA	Water	8260B	
560-39534-16	AOC-PZ05-060	Total/NA	Water	8260B	
LCS 560-87145/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-87145/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 87183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-39534-15	AOC-MWU31-090	Total/NA	Water	8260B	
560-39534-15 MS	AOC-MWU31-090	Total/NA	Water	8260B	
560-39534-15 MSD	AOC-MWU31-090	Total/NA	Water	8260B	
560-39534-17	AOC-PZ05-061	Total/NA	Water	8260B	
560-39534-18	AOC-PZ06-040	Total/NA	Water	8260B	
LCS 560-87183/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-87183/8	Method Blank	Total/NA	Water	8260B	

Certification Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-39534-1
SDG: April 2013

Laboratory: TestAmerica Corpus Christi

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-13
Oklahoma	State Program	6	9968	08-31-13
Texas	NELAP	6	T104704210-12-8	03-31-14
USDA	Federal		P330-11-00060	02-03-14

Method Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-39534-1
SDG: April 2013

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: 560-39534-1
SDG: April 2013

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-39534-1	AOC-EMWL37T-090	Water	04/22/13 13:20	04/25/13 12:17
560-39534-2	AOC-EMWL39T-100	Water	04/22/13 14:15	04/25/13 12:17
560-39534-3	AOC-0413-TB03	Water	04/23/13 12:00	04/25/13 12:17
560-39534-4	AOC-EMWL34T-090	Water	04/22/13 15:10	04/25/13 12:17
560-39534-5	AOC-EMWL35B-090	Water	04/22/13 15:50	04/25/13 12:17
560-39534-6	AOC-EMWL35B-091	Water	04/22/13 15:50	04/25/13 12:17
560-39534-7	AOC-EMWL36T-090	Water	04/22/13 16:40	04/25/13 12:17
560-39534-8	AOC-EMWU3T-100	Water	04/23/13 09:05	04/25/13 12:17
560-39534-9	AOC-EPZ04-110	Water	04/23/13 09:38	04/25/13 12:17
560-39534-10	AOC-EPZ05-110	Water	04/23/13 10:25	04/25/13 12:17
560-39534-11	AOC-LPZ41-060	Water	04/23/13 11:30	04/25/13 12:17
560-39534-12	AOC-LPZ40-050	Water	04/23/13 12:30	04/25/13 12:17
560-39534-13	AOC-EMWU42T-070	Water	04/23/13 13:10	04/25/13 12:17
560-39534-14	AOC-EMW50-063	Water	04/23/13 14:35	04/25/13 12:17
560-39534-15	AOC-MWU31-090	Water	04/23/13 15:20	04/25/13 12:17
560-39534-16	AOC-PZ05-060	Water	04/23/13 15:55	04/25/13 12:17
560-39534-17	AOC-PZ05-061	Water	04/23/13 15:55	04/25/13 12:17
560-39534-18	AOC-PZ06-040	Water	04/23/13 16:35	04/25/13 12:17

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

Chain of Custody Record

TestAr THE LEADER IN ENVI

Loc: 560
39534

Client Information	Sampler: NH/LR	Lab PM: Kellogg, Timothy L.	Carrier Tracking No(s):	COC No: 560-9038-862.1
Client Contact: David Zuvanich	Phone: 512.750.2597	E-Mail: tim.kellogg@testamericainc.com		Page: Page 1 of 2
Company: El Paso Energy Corporation				Job #: 04 4/23/13
Address: 1001 Louisiana Street Room S1905B	Due Date Requested: See W.O.			
City: Houston	TAT Requested (days): See W.O.			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: C-TEST-ELEMENTIS-017 CC06 ST09			
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 - (MOD) BTEX/MTBE	Total Number of Containers	Special Instructions/Note:
			Preservation Code:				N		
AOC-EMWL37T-090	4/22/13	1320	G	Water	N	N	X	3	
AOC-EMWL39T-100		1415		Water			X	3	
AOC-0413-TB03		1200		Water			X	2	
AOC-EMWL34T-090		1510		Water			X	3	
AOC-EMWL35B-090		1550		Water			X	3	
AOC-EMWL35B-091		1550		Water			X	3	
AOC-EMWL36T-090		1640		Water			X	3	
AOC-EMWU3T-100	4/23/13	0905		Water			X	3	
AOC-EPZ04-110		0938		Water			X	3	
AOC-EPZ05-110		1025		Water			X	3	
AOC-LPZ41-060		1130		Water			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: 4/24/13 1217	Company	Received by:	Date/Time: 4/24/13 1217	Company TTCE
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: 1.5°C

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: NH/LR	Lab PM: Kellogg, Timothy L.	Carrier Tracking No(s):	COC No: 560-9038-862.2
Client Contact: David Zuvanich	Phone: 512-750-2597	E-Mail: tim.kellogg@testamericainc.com		Page: Page 2 of 2
Company: El Paso Energy Corporation				Job #: NH-4/23/13
Address: 1001 Louisiana Street Room S1905B	Due Date Requested: See W.O.			
City: Houston	TAT Requested (days): See W.O.			
State, Zip: TX, 77002				
Phone: 512-419-5208(Tel)	PO #: Purchase Order not required			
Email:	WO #: C-TEST-ELEMENTIS-017 CC06 ST09			
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 - (MOD) BTEX/MTBE	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N		
AOC-LPZ40-050	4/23/13	1230	G	Water			X	3	
AOC-EMWV42T-070		1310		Water			X	3	
AOC-EMW50-063		1435		Water		X	X	6	MS/MSD
AOC-MWV31-090		1520		Water			X	3	
AOC-PZ05-060		1555		Water			X	3	
AOC-PZ05-061		1555		Water			X	3	
AOC-PZ06-040		1635		Water			X	3	No HCl, High Benzene concentrations likely
				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: 4/24/13 1217	Company	Received by:	Date/Time: 4/24/13 1217	Company
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: 560-39534-1
SDG Number: April 2013

Login Number: 39534
List Number: 1
Creator: McDermott, Vivian

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	

Default Detection Limits

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-39534-1
SDG: April 2013

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

Analyte	MQL	MDL	Units	Method
Benzene	1.00	0.140	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: 560-39575-1
TestAmerica Sample Delivery Group: April 2013
Client Project/Site: AOC Groundwater Analysis

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

Attn: Ms. Jean Youngerman

Authorized for release by:
5/3/2013 10:31:40 AM

Timothy Kellogg
Lab Director
tim.kellogg@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: AOC Groundwater Analysis

TestAmerica Job ID: 560-39575-1
SDG: April 2013

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
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
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)
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)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Corpus Christi
TRRP Data Package Cover Page

Job Number: 560-39575-1

Project Name/Number: Elementis AOC Groundwater/April 2013

This Data Package consists of:

This signature page, the laboratory review checklist, and the following Reportable Data:

- ☒ R1 Field Chain-of-Custody Form
- ☒ 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
  - d) The laboratory's LCS QC limits
- ☒ R7 Test Reports for 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 sample,
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☒ R8 Laboratory analytical duplicates (if applicable) recovery and precision, including:
  - 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 limit (MQL) 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 the 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 the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory is NELAC accredited under 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 has been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm, to the best of my knowledge, that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld."

Timothy L. Kellogg	Timothy L. Kellogg	5/3/2013
Name (printed)	Signature	Date

Laboratory Director
Official Title (printed)

LRC Date: May 3, 2013	Laboratory Job Number: 560-39575-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	**OI**	**CHAIN-OF-CUSTODY (C-O-C)**					
		1) Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				1
		2) Were all departures from standard conditions described in an exception report or case narrative?	X				
R2	**OI**	**SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	**OI**	**TEST REPORTS**					
		1) Were all samples prepared and analyzed within holding time?	X				
		2) Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample quantitation limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035			X		
		9) If required for the project, TICs reported?			X		
R4	**O**	**SURROGATE RECOVERY DATA**					
		1) Were surrogates added prior to extraction?	X				
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	**OI**	**TEST REPORTS/SUMMARY FORMS FOR BLANK SAMPLES**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations <MQL?	X				
R6	**OI**	**LABORATORY CONTROL SAMPLES (LCS)**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits?	X				
R7	**OI**	**MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD) DATA**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	**OI**	**ANALYTICAL DUPLICATE DATA**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	**OI**	**METHOD QUANTITATION LIMITS (MQLs)**					
		1) Are the MQLs for each method analyte listed and included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCS included in the laboratory data package?	X				

LRC Date: May 3, 2013	Laboratory Job Number: 560-39575-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R10	**OI**	**OTHER PROBLEMS/ANOMALIES**					
		1) Are all known problems/anomalies/special conditions noted in this LRC, ER, or case narrative?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
S1	**OI**	**INITIAL CALIBRATION (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within the QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	**OI**	**INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV and CCV) AND CONTINUING CALIBRATION BLANK (CCB)**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analytes within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	X				
S3	**O**	**MASS SPECTRAL TUNING**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	**O**	**INTERNAL STANDARDS (IS)**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	**OI**	**RAW DATA (NELAC SECTION 5.5.10)**					
		1) Were the raw data (e.g. chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	**O**	**DUAL COLUMN CONFIRMATION**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	**O**	**TENTATIVELY IDENTIFIED COMPOUNDS (TICs)**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	**I**	**INTERFERENCE CHECK SAMPLE (ICS) RESULTS**					
		1) Were percent recoveries within method QC limits?			X		
S9	**I**	**SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	**OI**	**METHOD DETECTION LIMIT (MDL) STUDIES**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCS?	X				
S11	**OI**	**PROFICIENCY TEST REPORTS**					
		1) Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	**OI**	**STANDARDS DOCUMENTATION**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	**OI**	**COMPOUND/ANALYTE IDENTIFICATION PROCEDURES**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	**OI**	**DEMONSTRATION OF ANALYST COMPETENCY (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5?	X				

LRC Date: May 3, 2013	Laboratory Job Number: 560-39575-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater/April 2013

		2) Is documentation of the analyst's competency up-to-date and on file?	X					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S15	**OI**	**VERIFICATION/VALIDATION DOCUMENTATION FOR METHODS (NELAC CHAPTER 5)**					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	**OI**	**LABORATORY STANDARD OPERATING PROCEDURES (SOPs)**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

EXCEPTION REPORTS

ER#[5]	DESCRIPTION
1	Sample Receipt: The samples were received on 4/26/2013 4:48 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.9° C.

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable)
3 NA = Not applicable
4 NR = Not reviewed
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked)

Client Sample Results

Client: URS Corporation
Project/Site: AOC Groundwater Analysis

TestAmerica Job ID: 560-39575-1
SDG: April 2013

Client Sample ID: AOC-EMWU4T-040

Lab Sample ID: 560-39575-1

Date Collected: 04/26/13 14:18
Matrix: Water
Date Received: 04/26/13 16:48

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**957000**		1.00	0.140	ug/L			04/29/13 14:31	10000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*04/29/13 14:31*	*10000*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*04/29/13 14:31*	*10000*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 130*		*04/29/13 14:31*	*10000*
Toluene-d8 (Surr)	*96*		*70 - 130*		*04/29/13 14:31*	*10000*

Client Sample ID: Trip Blank

Lab Sample ID: 560-39575-2

Date Collected: 04/26/13 14:18
Matrix: Water
Date Received: 04/26/13 16:48

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/29/13 14:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*04/29/13 14:06*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*04/29/13 14:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*		*04/29/13 14:06*	*1*
Toluene-d8 (Surr)	*102*		*70 - 130*		*04/29/13 14:06*	*1*

QC Sample Results

Client: URS Corporation
Project/Site: AOC Groundwater Analysis

TestAmerica Job ID: 560-39575-1
SDG: April 2013

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

Lab Sample ID: MB 560-87198/8
Matrix: Water
Analysis Batch: 87198

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			04/29/13 12:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*		*04/29/13 12:51*	*1*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*04/29/13 12:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 130*		*04/29/13 12:51*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*04/29/13 12:51*	*1*

Lab Sample ID: LCS 560-87198/3
Matrix: Water
Analysis Batch: 87198

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	23.48		ug/L		94	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*98*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 130*
Toluene-d8 (Surr)	*97*		*70 - 130*

QC Association Summary

Client: URS Corporation
Project/Site: AOC Groundwater Analysis

TestAmerica Job ID: 560-39575-1
SDG: April 2013

GC/MS VOA

Analysis Batch: 87198

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-39575-1	AOC-EMWU4T-040	Total/NA	Water	8260B	
560-39575-2	Trip Blank	Total/NA	Water	8260B	
LCS 560-87198/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-87198/8	Method Blank	Total/NA	Water	8260B	

Certification Summary

Client: URS Corporation
Project/Site: AOC Groundwater Analysis

TestAmerica Job ID: 560-39575-1
SDG: April 2013

Laboratory: TestAmerica Corpus Christi

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-13
Oklahoma	State Program	6	9968	08-31-13
Texas	NELAP	6	T104704210-12-8	03-31-14
USDA	Federal		P330-11-00060	02-03-14

Method Summary

Client: URS Corporation
Project/Site: AOC Groundwater Analysis

TestAmerica Job ID: 560-39575-1
SDG: April 2013

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: AOC Groundwater Analysis

TestAmerica Job ID: 560-39575-1
SDG: April 2013

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-39575-1	AOC-EMWU4T-040	Water	04/26/13 14:18	04/26/13 16:48
560-39575-2	Trip Blank	Water	04/26/13 14:18	04/26/13 16:48

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

No. 46834

CHAIN OF CUSTODY RECORD

Loc: 560

39575

CUSTOMER INFORMATION	PROJECT INFORMATION
COMPANY: URS	PROJECT NAME/NUMBER: CIDNEY S.
SEND REPORT TO: JEAN KLINGERMAN	BILLING INFORMATION
ADDRESS: 9400 AMBERGLEN	BILL TO:
	ADDRESS:
PHONE: 1512 454 4797	PHONE:
FAX:	FAX: PO NO:

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER OF CONTAINERS	SW 8260 (BENZENE)							REMARKS/PRECAUTIONS.
1	40 ML VOA	4/26/13	1418	GWS	40ML	HCL	1	X							
2	40 ML VOA	↓	↓	↓	↓	↓	1	X							
3	40 ML VOA						1	X							

SEAL INTACT: yes

TEMP C: 3.07

CORR TEMP C: 3.9

IR GUN ID: TR4

INITIAL/DATE: 4-26-13 RW

SAMPLER: O. REED

SHIPMENT METHOD:

AIRBILL NO.:

REQUIRED TURNAROUND ☑ ROUTINE TAT (10 BUSINESS DAYS) ☐ RUSH TAT (MAY REQUIRE SURCHARGE)

1. RELINQUISHED BY: Jeremiah Reed	DATE	2. RELINQUISHED BY:	DATE	3. RELINQUISHED BY:	DATE
SIGNATURE:	4/26/13	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY: URS	TIME 1648	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY:	DATE	2. RECEIVED BY:	DATE	3. RECEIVED BY:	DATE
SIGNATURE: RW	4-26-13	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY: TAOCC	TIME 16:48	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME

TAL-8222-560 (0412)

TestAmerica
1733 N. Padre Island Drive
Corpus Christi, TX 78408
Phone: 361.289.2673/Fax: 361.289.2471

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-39575-1
SDG Number: April 2013

Login Number: 39575
List Number: 1
Creator: McDermott, Vivian

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	

Default Detection Limits

Client: URS Corporation
Project/Site: AOC Groundwater Analysis

TestAmerica Job ID: 560-39575-1
SDG: April 2013

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 2013

Data Usability Summary for the Semiannual AOC Groundwater Sampling Event – October 2013

El Paso Merchant Energy-Petroleum Company/Elementis
Corpus Christi, Texas

November 2013

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 –October 2013

This Data Usability Summary describes the data quality for groundwater results from samples collected during the October 2013 Administrative Order of 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 23 samples, 3 field duplicates, and 2 trip blanks were collected. The samples were collected from 16 October to 18 October 2013 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, Table A-2 presents inorganic analyses results for groundwater, and Table A-3 presents inorganic analyses results for surface water. 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	Chloride SW9251
AOC-CL-FLUME-010	560-43196-5	10/18/2013	--	X
AOC-EMW48-020	560-43196-7	10/18/2013	X	X
AOC-EMWL6T-110	560-43178-5	10/16/2013	X	X
AOC-EMWL8T-130	560-43178-3	10/16/2013	X	X
AOC-EMWL9T-130	560-43178-4	10/16/2013	X	X
AOC-EMWL34T-100	560-43178-15	10/17/2013	X	--
AOC-EMWL35B-100	560-43178-14	10/17/2013	X	--
AOC-EMWL36T-100	560-43178-16	10/17/2013	X	--
AOC-EMWL38T-103	560-43178-8	10/16/2013	X	--
AOC-EMWL37T-100	560-43178-13	10/17/2013	X	--
AOC-EMWL39T-110	560-43178-17	10/17/2013	X	--
AOC-EMWL41T-100	560-43178-6	10/16/2013	X	--
AOC-EMWU4T-090	560-43196-3	10/18/2013	X	X
AOC-EMWU6T-113	560-43178-9	10/16/2013	X	--
AOC-EMWU32T-090	560-43178-12	10/16/2013	X	--
AOC-EPZ08-020	560-43196-2	10/17/2013	X	X
AOC-MWU29-010	560-43178-20	10/17/2013	X	X
AOC-MWU32-030	560-43196-8	10/18/2013	X	X
AOC-MWU36-100	560-43178-10	10/16/2013	X	--
AOC-OWL08-110	560-43178-1	10/16/2013	X	X
AOC-OWL14R-090	560-43178-18	10/18/2013	X	--
AOC-PZ09-030	560-43196-4	10/18/2013	X	X
AOC-R1-030	560-43196-6	10/18/2013	X	X
Field Duplicates				
AOC-EMWL41T-101	560-43178-7	10/16/2013	X	--
AOC-MWU29-010	560-43178-20	10/17/2013	X	--
AOC-MWU36-101	560-43178-11	10/16/2013	X	--

Table 1. Cross-Reference of Sample and Laboratory IDs (Continued)

Sample ID	Laboratory ID	Date Sampled	Benzene SW8260B	Chloride SW9251
Trip Blanks				
AOC-1013-TB01	560-43178-2	10/16/2013	X	--
AOC-1013-TB02	560-43196-1	10/17/2013	X	--

Sample IDs ending in -xx3 are client-specified Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples.
-- Not analyzed.
ID - Identification.
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 2013 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

Twenty-two samples 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.

Chloride by EPA Method SW9251

Twelve samples were analyzed for chloride by the U.S. Environmental Protection Agency (EPA) Method SW9251. The QC requirements that were evaluated included sample receipt conditions, holding times, detection limits, calibrations, blanks, laboratory control samples, and matrix spike/matrix spike duplicate samples. The laboratory-derived acceptance criteria were used to evaluate the data. The QC results indicate that the data are usable for their intended purpose.

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

PARAMETER	SITE ID LOCATION ID SAMPLE ID DATE SAMPLED											
	EP EMW-48 AOC-EMW48-020 18-OCT-13			OffELM_O EMW-L34T AOC-EMWL34T-100 17-OCT-13			OffELM_O EMW-L35B AOC-EMWL35B-100 17-OCT-13			OffELM_O EMW-L36T AOC-EMWL36T-100 17-OCT-13		
SW8260B - Volatile Organic Compounds (ug/L)												
Benzene	1130000	(1400	)[10000]	468000	(700	)[5000]	5880	(7.00	)[50]	1080000	(1400	)[1000

PARAMETER	SITE ID LOCATION ID SAMPLE ID DATE SAMPLED																
	OffELM_O EMW-L37T AOC-EMWL37T-100 17-OCT-13				OffELM_O EMW-L38T AOC-EMWL38T-103 16-OCT-13				OffELM_O EMW-L39T AOC-EMWL39T-110 17-OCT-13				EP EMW-L41T AOC-EMWL41T-100 16-OCT-13			
SW8260B - Volatile Organic Compounds (ug/L)																
Benzene	ND	U	(0.140	)[1]	ND	U	(0.140	)[1]	4.25		(0.140	)[1]	ND	U	(0.140	)[1]

SITE ID	EP	EP	OffELM_O	OffELM_O
LOCATION ID	EMW-L41T	EMW-L6T	EMW-L8T	EMW-L9T
SAMPLE ID	AOC-EMWL41T-101 Dup of AOC-EMWL41T-100	AOC-EMWL6T-110	AOC-EMWL8T-130	AOC-EMWL9T-130
DATE SAMPLED	16-OCT-13	16-OCT-13	16-OCT-13	16-OCT-13
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.140)[1]	0.416 J (0.140)[1]	ND U (0.140)[1]	0.358 J (0.140)[1]

	SITE ID											
	LOCATION ID											
	SAMPLE ID											
	DATE SAMPLED											
PARAMETER	OffELM_O EMW-U32T AOC-EMWU32T-090 16-OCT-13			EP EMW-U4T AOC-EMWU4T-090 18-OCT-13			OffELP_O EMW-U6T AOC-EMWU6T-113 16-OCT-13			OffELP_O EPZ-08 AOC-EPZ08-020 17-OCT-13		
SW8260B - Volatile Organic Compounds (ug/L)												
Benzene	24.7	(0.140	)[1]	15100	(28.0	)[200]	ND U	(0.140	)[1]	439	(0.700	)[5]

SITE ID	OffELM_O	OffELM_O	OffELM_O	OffELM_O
LOCATION ID	MWU29	MWU29	MWU32	MWU36
SAMPLE ID	AOC-MWU29-010	AOC-MWU29-011 Dup of AOC-MWU29-010	AOC-MWU32-030	AOC-MWU36-100
DATE SAMPLED	17-OCT-13	17-OCT-13	18-OCT-13	16-OCT-13
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	777 (1.40)[10]	822 (1.40)[10]	233000 (280)[2000]	ND U (2.80)[20]

SITE ID	OffELM_O	OffELM_O	OffELM_O	OffELM_O
LOCATION ID	MWU36	OW-L08	OW-L14R	PZ-09
SAMPLE ID	AOC-MWU36-101 Dup of AOC-MWU36-100	AOC-OWL08-110	AOC-OWL14R-090	AOC-PZ09-030
DATE SAMPLED	16-OCT-13	16-OCT-13	17-OCT-13	18-OCT-13
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (2.80)[20]	ND U (0.140)[1]	ND U (0.140)[1]	484000 (700)[5000

SITE ID	EP
LOCATION ID	R1
SAMPLE ID	AOC-R1-030
DATE SAMPLED	18-OCT-13

PARAMETER			
SW8260B - Volatile Organic Compounds (ug/L)			
Benzene	1140000	(1400)	[10000]

Table A-2

Inorganic Analysis Results, Groundwater

PARAMETER	SITE ID LOCATION ID SAMPLE ID DATE SAMPLED											
	EP EMW-48 AOC-EMW48-020 18-OCT-13			EP EMW-L6T AOC-EMWL6T-110 16-OCT-13			OffELM_O EMW-L8T AOC-EMWL8T-130 16-OCT-13			OffELM_O EMW-L9T AOC-EMWL9T-130 16-OCT-13		
SW9251 - Chloride (mg/L)												
Chloride	6160	(500	)[100]	19300	(500	)[100]	19200	(1000	)[200]	20500	(1000	)[200]

SITE ID	EP	OffELP_O	OffELM_O	OffELM_O
LOCATION ID	EMW-U4T	EPZ-08	MWU29	MWU32
SAMPLE ID	AOC-EMWU4T-090	AOC-EPZ08-020	AOC-MWU29-010	AOC-MWU32-030
DATE SAMPLED	18-OCT-13	17-OCT-13	17-OCT-13	18-OCT-13
PARAMETER				
SW9251 - Chloride (mg/L)				
Chloride	232 (20.0)[4]	16700 (500)[100]	6040 (500)[100]	4660 (500)[100]

	SITE ID								
	LOCATION ID								
	SAMPLE ID								
	DATE SAMPLED								
PARAMETER	OffELM_O			OffELM_O			EP		
	OW-L08			PZ-09			R1		
	AOC-OWL08-110			AOC-PZ09-030			AOC-R1-030		
	16-OCT-13			18-OCT-13			18-OCT-13		
SW9251 - Chloride (mg/L)									
Chloride	19700	(500	)[100]	17700	(500	)[100]	6640	(500	)[100]

Table A-3

Inorganic Analysis Results, Surface Water

Results Of Inorganic Analyses For Surface Water Samples, El Paso - Elementis AOC Sampling October 2013

	SITE ID		
	LOCATION ID		
	SAMPLE ID		
	DATE SAMPLED		
PARAMETER	EP FLUME AOC-CL-FLUME-010 18-OCT-13		
SW9251 - Chloride (mg/L)			
Chloride	27100	(1000)	[200]

Compiled: 10/31/13

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

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: 560-43178-1
TestAmerica Sample Delivery Group: October 2013
Client Project/Site: Elementis AOC Groundwater

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

Attn: Ms. Jean Youngerman

Authorized for release by:
10/28/2013 5:27:48 PM

Timothy Kellogg, Lab Director
(361)289-2673
tim.kellogg@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: 560-43178-1
SDG: October 2013

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.

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
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)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Corpus Christi
TRRP Data Package Cover Page

Job Number: 560-43178-1

Project Name/Number: Elementis AOC Groundwater – Oct. 2013

This Data Package consists of:

This signature page, the laboratory review checklist, and the following Reportable Data:

- ☒ R1 Field Chain-of-Custody Form
- ☒ 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
  - d) The laboratory's LCS QC limits
- ☒ R7 Test Reports for 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 sample,
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☒ R8 Laboratory analytical duplicates (if applicable) recovery and precision, including:
  - 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 limit (MQL) 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 the 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 the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory is NELAC accredited under 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 has been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm, to the best of my knowledge, that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld."

Timothy L. Kellogg	Timothy L. Kellogg	10/28/2013
Name (printed)	Signature	Date

Laboratory Director
Official Title (printed)

LRC Date: October 28, 2013	Laboratory Job Number: 560-43178-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater – October 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	**OI**	**CHAIN-OF-CUSTODY (C-O-C)**					
		1) Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				1
		2) Were all departures from standard conditions described in an exception report or case narrative?	X				
R2	**OI**	**SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	**OI**	**TEST REPORTS**					
		1) Were all samples prepared and analyzed within holding time?	X				
		2) Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample quantitation limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035			X		
		9) If required for the project, TICs reported?			X		
R4	**O**	**SURROGATE RECOVERY DATA**					
		1) Were surrogates added prior to extraction?	X				
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	**OI**	**TEST REPORTS/SUMMARY FORMS FOR BLANK SAMPLES**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations <MQL?	X				
R6	**OI**	**LABORATORY CONTROL SAMPLES (LCS)**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits?	X				
R7	**OI**	**MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD) DATA**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	**OI**	**ANALYTICAL DUPLICATE DATA**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	**OI**	**METHOD QUANTITATION LIMITS (MQLs)**					
		1) Are the MQLs for each method analyte listed and included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCS included in the laboratory data package?	X				

LRC Date: October 28, 2013	Laboratory Job Number: 560-43178-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater – October 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R10	**OI**	**OTHER PROBLEMS/ANOMALIES**					
		1) Are all known problems/anomalies/special conditions noted in this LRC, ER, or case narrative?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				2
		3) Is the laboratory NELAC-accredited under Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
S1	**OI**	**INITIAL CALIBRATION (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within the QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	**OI**	**INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV and CCV) AND CONTINUING CALIBRATION BLANK (CCB)**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analytes within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	X				
S3	**O**	**MASS SPECTRAL TUNING**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	**O**	**INTERNAL STANDARDS (IS)**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	**OI**	**RAW DATA (NELAC SECTION 5.5.10)**					
		1) Were the raw data (e.g. chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	**O**	**DUAL COLUMN CONFIRMATION**					
		1) Did dual column confirmation results meet the method-required QC?	X				
S7	**O**	**TENTATIVELY IDENTIFIED COMPOUNDS (TICs)**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	**I**	**INTERFERENCE CHECK SAMPLE (ICS) RESULTS**					
		1) Were percent recoveries within method QC limits?			X		
S9	**I**	**SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	**OI**	**METHOD DETECTION LIMIT (MDL) STUDIES**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCS?	X				
S11	**OI**	**PROFICIENCY TEST REPORTS**					
		1) Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	**OI**	**STANDARDS DOCUMENTATION**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	**OI**	**COMPOUND/ANALYTE IDENTIFICATION PROCEDURES**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	**OI**	**DEMONSTRATION OF ANALYST COMPETENCY (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5?	X				

LRC Date: October 28, 2013	Laboratory Job Number: 560-43178-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater – October 2013

		2) Is documentation of the analyst's competency up-to-date and on file?	X					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S15	**OI**	**VERIFICATION/VALIDATION DOCUMENTATION FOR METHODS (NELAC CHAPTER 5)**					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	**OI**	**LABORATORY STANDARD OPERATING PROCEDURES (SOPs)**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

EXCEPTION REPORTS

ER#[5]	DESCRIPTION
1	Sample Receipt: The samples were received on 10/17/2013 4:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.4° C.
2	EPA Method 8260B (QC Batch #56094019) Please note that samples 560-43178-10 and -11 were diluted due to high concentrations of non-target compounds present in the matrix. Elevated reporting limits (SDLs) are provided.

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable)
3 NA = Not applicable
4 NR = Not reviewed
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked)

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-43178-1
SDG: October 2013

Client Sample ID: AOC-OWL08-110

Lab Sample ID: 560-43178-1
Matrix: Water
Date Collected: 10/16/13 10:00
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/18/13 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*10/18/13 17:08*	*1*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*10/18/13 17:08*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 130*		*10/18/13 17:08*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 140*		*10/18/13 17:08*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**19700**		2000	500	mg/L			10/21/13 11:44	100

Client Sample ID: AOC-1013-TB01

Lab Sample ID: 560-43178-2
Matrix: Water
Date Collected: 10/16/13 09:00
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/18/13 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*10/18/13 17:33*	*1*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*10/18/13 17:33*	*1*
Dibromofluoromethane (Surr)	*104*		*70 - 130*		*10/18/13 17:33*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*70 - 140*		*10/18/13 17:33*	*1*

Client Sample ID: AOC-EMWL8T-130

Lab Sample ID: 560-43178-3
Matrix: Water
Date Collected: 10/16/13 10:45
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/18/13 17:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*70 - 130*		*10/18/13 17:58*	*1*
4-Bromofluorobenzene (Surr)	*88*		*70 - 130*		*10/18/13 17:58*	*1*
Dibromofluoromethane (Surr)	*105*		*70 - 130*		*10/18/13 17:58*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 140*		*10/18/13 17:58*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**19200**		4000	1000	mg/L			10/21/13 12:01	200

Client Sample ID: AOC-EMWL-9T-130

Lab Sample ID: 560-43178-4
Matrix: Water
Date Collected: 10/16/13 12:15
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.358**	**J**	1.00	0.140	ug/L			10/18/13 18:23	1

Client Sample ID: AOC-EMWL-9T-130 — Lab Sample ID: 560-43178-4

Date Collected: 10/16/13 12:15 — **Matrix: Water**
Date Received: 10/17/13 16:30

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*10/18/13 18:23*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*10/18/13 18:23*	*1*
Dibromofluoromethane (Surr)	*104*		*70 - 130*		*10/18/13 18:23*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 140*		*10/18/13 18:23*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**20500**		4000	1000	mg/L			10/21/13 12:02	200

Client Sample ID: AOC-EMWL-6T-110 — Lab Sample ID: 560-43178-5

Date Collected: 10/16/13 14:25 — **Matrix: Water**
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.416**	**J**	1.00	0.140	ug/L			10/18/13 18:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*89*		*70 - 130*		*10/18/13 18:48*	*1*
4-Bromofluorobenzene (Surr)	*87*		*70 - 130*		*10/18/13 18:48*	*1*
Dibromofluoromethane (Surr)	*109*		*70 - 130*		*10/18/13 18:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*114*		*70 - 140*		*10/18/13 18:48*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**19300**		2000	500	mg/L			10/21/13 11:47	100

Client Sample ID: AOC-EMWL41T-100 — Lab Sample ID: 560-43178-6

Date Collected: 10/16/13 15:20 — **Matrix: Water**
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/19/13 15:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*70 - 130*		*10/19/13 15:40*	*1*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*10/19/13 15:40*	*1*
Dibromofluoromethane (Surr)	*105*		*70 - 130*		*10/19/13 15:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 140*		*10/19/13 15:40*	*1*

Client Sample ID: AOC-EMWL41T-101 — Lab Sample ID: 560-43178-7

Date Collected: 10/16/13 15:20 — **Matrix: Water**
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/18/13 19:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*10/18/13 19:13*	*1*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*10/18/13 19:13*	*1*

Client Sample ID: AOC-EMWL41T-101

Lab Sample ID: 560-43178-7
Date Collected: 10/16/13 15:20
Matrix: Water
Date Received: 10/17/13 16:30

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	107		70 - 130		10/18/13 19:13	1
1,2-Dichloroethane-d4 (Surr)	113		70 - 140		10/18/13 19:13	1

Client Sample ID: AOC-EMWL38T-103

Lab Sample ID: 560-43178-8
Date Collected: 10/16/13 17:05
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/19/13 11:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	94		70 - 130		10/19/13 11:04	1
4-Bromofluorobenzene (Surr)	89		70 - 130		10/19/13 11:04	1
Dibromofluoromethane (Surr)	103		70 - 130		10/19/13 11:04	1
1,2-Dichloroethane-d4 (Surr)	110		70 - 140		10/19/13 11:04	1

Client Sample ID: AOC-EMWU6T-113

Lab Sample ID: 560-43178-9
Date Collected: 10/16/13 14:20
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/19/13 11:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	95		70 - 130		10/19/13 11:25	1
4-Bromofluorobenzene (Surr)	97		70 - 130		10/19/13 11:25	1
Dibromofluoromethane (Surr)	98		70 - 130		10/19/13 11:25	1
1,2-Dichloroethane-d4 (Surr)	105		70 - 140		10/19/13 11:25	1

Client Sample ID: AOC-MWU36-100

Lab Sample ID: 560-43178-10
Date Collected: 10/16/13 15:05
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.80	U	20.0	2.80	ug/L			10/20/13 17:49	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		70 - 130		10/20/13 17:49	20
4-Bromofluorobenzene (Surr)	101		70 - 130		10/20/13 17:49	20
Dibromofluoromethane (Surr)	107		70 - 130		10/20/13 17:49	20
1,2-Dichloroethane-d4 (Surr)	109		70 - 140		10/20/13 17:49	20

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-43178-1
SDG: October 2013

Client Sample ID: AOC-MWU36-101

Lab Sample ID: 560-43178-11
Date Collected: 10/16/13 15:05
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.80	U	20.0	2.80	ug/L			10/20/13 18:14	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*10/20/13 18:14*	*20*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*		*10/20/13 18:14*	*20*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*10/20/13 18:14*	*20*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 140*		*10/20/13 18:14*	*20*

Client Sample ID: AOC-EMWU32T-090

Lab Sample ID: 560-43178-12
Date Collected: 10/16/13 15:55
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**24.7**		1.00	0.140	ug/L			10/19/13 16:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*93*		*70 - 130*		*10/19/13 16:55*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*10/19/13 16:55*	*1*
Dibromofluoromethane (Surr)	*108*		*70 - 130*		*10/19/13 16:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 140*		*10/19/13 16:55*	*1*

Client Sample ID: AOC-EMWL37T-100

Lab Sample ID: 560-43178-13
Date Collected: 10/17/13 08:30
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/18/13 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*10/18/13 19:38*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*10/18/13 19:38*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 130*		*10/18/13 19:38*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 140*		*10/18/13 19:38*	*1*

Client Sample ID: AOC-EMWL35B-100

Lab Sample ID: 560-43178-14
Date Collected: 10/17/13 09:50
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**5880**		50.0	7.00	ug/L			10/19/13 17:20	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*91*		*70 - 130*		*10/19/13 17:20*	*50*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*10/19/13 17:20*	*50*
Dibromofluoromethane (Surr)	*110*		*70 - 130*		*10/19/13 17:20*	*50*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 140*		*10/19/13 17:20*	*50*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-43178-1
SDG: October 2013

Client Sample ID: AOC-EMWL34T-100

Lab Sample ID: 560-43178-15
Date Collected: 10/17/13 10:57
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	468000		5000	700	ug/L			10/19/13 17:45	5000

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	93		70 - 130		10/19/13 17:45	5000
4-Bromofluorobenzene (Surr)	88		70 - 130		10/19/13 17:45	5000
Dibromofluoromethane (Surr)	106		70 - 130		10/19/13 17:45	5000
1,2-Dichloroethane-d4 (Surr)	104		70 - 140		10/19/13 17:45	5000

Client Sample ID: AOC-EMWL36T-100

Lab Sample ID: 560-43178-16
Date Collected: 10/17/13 12:20
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1080000		10000	1400	ug/L			10/19/13 18:10	10000

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	93		70 - 130		10/19/13 18:10	10000
4-Bromofluorobenzene (Surr)	89		70 - 130		10/19/13 18:10	10000
Dibromofluoromethane (Surr)	103		70 - 130		10/19/13 18:10	10000
1,2-Dichloroethane-d4 (Surr)	104		70 - 140		10/19/13 18:10	10000

Client Sample ID: AOC-EMWL-39T-110

Lab Sample ID: 560-43178-17
Date Collected: 10/17/13 14:00
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	4.25		1.00	0.140	ug/L			10/18/13 20:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	94		70 - 130		10/18/13 20:03	1
4-Bromofluorobenzene (Surr)	90		70 - 130		10/18/13 20:03	1
Dibromofluoromethane (Surr)	112		70 - 130		10/18/13 20:03	1
1,2-Dichloroethane-d4 (Surr)	115		70 - 140		10/18/13 20:03	1

Client Sample ID: AOC-OWL14R-090

Lab Sample ID: 560-43178-18
Date Collected: 10/17/13 15:10
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/19/13 11:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	96		70 - 130		10/19/13 11:29	1
4-Bromofluorobenzene (Surr)	91		70 - 130		10/19/13 11:29	1
Dibromofluoromethane (Surr)	104		70 - 130		10/19/13 11:29	1
1,2-Dichloroethane-d4 (Surr)	106		70 - 140		10/19/13 11:29	1

Client Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-43178-1
SDG: October 2013

Client Sample ID: AOC-MWU29-011

Lab Sample ID: 560-43178-19

Date Collected: 10/17/13 16:03
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	822		10.0	1.40	ug/L			10/19/13 18:35	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*10/19/13 18:35*	*10*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*		*10/19/13 18:35*	*10*
Dibromofluoromethane (Surr)	*108*		*70 - 130*		*10/19/13 18:35*	*10*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 140*		*10/19/13 18:35*	*10*

Client Sample ID: AOC-MWU29-010

Lab Sample ID: 560-43178-20

Date Collected: 10/17/13 16:03
Matrix: Water
Date Received: 10/17/13 16:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	777		10.0	1.40	ug/L			10/19/13 19:00	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*91*		*70 - 130*		*10/19/13 19:00*	*10*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*		*10/19/13 19:00*	*10*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*10/19/13 19:00*	*10*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*10/19/13 19:00*	*10*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6040		2000	500	mg/L			10/21/13 11:47	100

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

Lab Sample ID: MB 560-93973/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 93973

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/18/13 12:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*70 - 130*		*10/18/13 12:32*	*1*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*10/18/13 12:32*	*1*
Dibromofluoromethane (Surr)	*104*		*70 - 130*		*10/18/13 12:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 140*		*10/18/13 12:32*	*1*

Lab Sample ID: LCS 560-93973/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 93973

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	26.43		ug/L		106	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*96*		*70 - 130*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*

Lab Sample ID: MB 560-94013/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94013

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/19/13 10:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*10/19/13 10:39*	*1*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*10/19/13 10:39*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*10/19/13 10:39*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 140*		*10/19/13 10:39*	*1*

Lab Sample ID: LCS 560-94013/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94013

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	25.58		ug/L		102	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*70 - 130*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*

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

Lab Sample ID: 560-43178-8 MS — **Client Sample ID: AOC-EMWL38T-103**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94013

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.140	U	25.0	25.41		ug/L		102	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*95*		*70 - 130*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*

Lab Sample ID: 560-43178-8 MSD — **Client Sample ID: AOC-EMWL38T-103**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94013

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	27.37		ug/L		109	70 - 130	7	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*70 - 130*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 140*

Lab Sample ID: MB 560-94014/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94014

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/19/13 11:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*10/19/13 11:00*	*1*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*		*10/19/13 11:00*	*1*
Dibromofluoromethane (Surr)	*96*		*70 - 130*		*10/19/13 11:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 140*		*10/19/13 11:00*	*1*

Lab Sample ID: LCS 560-94014/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94014

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	24.38		ug/L		98	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*70 - 130*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*103*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*

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

Lab Sample ID: 560-43178-9 MS — **Client Sample ID: AOC-EMWU6T-113**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94014

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.140	U	25.0	26.57		ug/L		106	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*70 - 130*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
Dibromofluoromethane (Surr)	*106*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*

Lab Sample ID: 560-43178-9 MSD — **Client Sample ID: AOC-EMWU6T-113**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94014

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	25.87		ug/L		103	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*104*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*

Lab Sample ID: MB 560-94019/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94019

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/20/13 16:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*10/20/13 16:58*	*1*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*		*10/20/13 16:58*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*10/20/13 16:58*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 140*		*10/20/13 16:58*	*1*

Lab Sample ID: LCS 560-94019/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94019

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	25.48		ug/L		102	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*70 - 130*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*
Dibromofluoromethane (Surr)	*105*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 140*

QC Sample Results

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-43178-1
SDG: October 2013

Method: 9251 - Chloride

Lab Sample ID: MB 560-94056/3
Matrix: Water
Analysis Batch: 94056

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.00	U	20.0	5.00	mg/L			10/21/13 11:38	1

Lab Sample ID: LCS 560-94056/4
Matrix: Water
Analysis Batch: 94056

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	150	156.7		mg/L		104	85 - 115

QC Association Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-43178-1
SDG: October 2013

GC/MS VOA

Analysis Batch: 93973

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43178-1	AOC-OWL08-110	Total/NA	Water	8260B	
560-43178-2	AOC-1013-TB01	Total/NA	Water	8260B	
560-43178-3	AOC-EMWL8T-130	Total/NA	Water	8260B	
560-43178-4	AOC-EMWL-9T-130	Total/NA	Water	8260B	
560-43178-5	AOC-EMWL-6T-110	Total/NA	Water	8260B	
560-43178-7	AOC-EMWL41T-101	Total/NA	Water	8260B	
560-43178-13	AOC-EMWL37T-100	Total/NA	Water	8260B	
560-43178-17	AOC-EMWL-39T-110	Total/NA	Water	8260B	
LCS 560-93973/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-93973/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 94013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43178-6	AOC-EMWL41T-100	Total/NA	Water	8260B	
560-43178-8	AOC-EMWL38T-103	Total/NA	Water	8260B	
560-43178-8 MS	AOC-EMWL38T-103	Total/NA	Water	8260B	
560-43178-8 MSD	AOC-EMWL38T-103	Total/NA	Water	8260B	
560-43178-12	AOC-EMWU32T-090	Total/NA	Water	8260B	
560-43178-14	AOC-EMWL35B-100	Total/NA	Water	8260B	
560-43178-15	AOC-EMWL34T-100	Total/NA	Water	8260B	
560-43178-16	AOC-EMWL36T-100	Total/NA	Water	8260B	
560-43178-18	AOC-OWL14R-090	Total/NA	Water	8260B	
560-43178-19	AOC-MWU29-011	Total/NA	Water	8260B	
560-43178-20	AOC-MWU29-010	Total/NA	Water	8260B	
LCS 560-94013/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-94013/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 94014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43178-9	AOC-EMWU6T-113	Total/NA	Water	8260B	
560-43178-9 MS	AOC-EMWU6T-113	Total/NA	Water	8260B	
560-43178-9 MSD	AOC-EMWU6T-113	Total/NA	Water	8260B	
LCS 560-94014/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-94014/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 94019

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43178-10	AOC-MWU36-100	Total/NA	Water	8260B	
560-43178-11	AOC-MWU36-101	Total/NA	Water	8260B	
LCS 560-94019/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-94019/8	Method Blank	Total/NA	Water	8260B	

General Chemistry

Analysis Batch: 94056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43178-1	AOC-OWL08-110	Total/NA	Water	9251	
560-43178-3	AOC-EMWL8T-130	Total/NA	Water	9251	
560-43178-4	AOC-EMWL-9T-130	Total/NA	Water	9251	
560-43178-5	AOC-EMWL-6T-110	Total/NA	Water	9251	

General Chemistry (Continued)

Analysis Batch: 94056 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43178-20	AOC-MWU29-010	Total/NA	Water	9251	
LCS 560-94056/4	Lab Control Sample	Total/NA	Water	9251	
MB 560-94056/3	Method Blank	Total/NA	Water	9251	

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-43178-1
SDG: October 2013

Client Sample ID: AOC-OWL08-110 — Lab Sample ID: 560-43178-1

Date Collected: 10/16/13 10:00 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	93973	10/18/13 17:08	RJT	TAL CC
Total/NA	Analysis	9251		100	94056	10/21/13 11:44	LPO	TAL CC

Client Sample ID: AOC-1013-TB01 — Lab Sample ID: 560-43178-2

Date Collected: 10/16/13 09:00 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	93973	10/18/13 17:33	RJT	TAL CC

Client Sample ID: AOC-EMWL8T-130 — Lab Sample ID: 560-43178-3

Date Collected: 10/16/13 10:45 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	93973	10/18/13 17:58	RJT	TAL CC
Total/NA	Analysis	9251		200	94056	10/21/13 12:01	LPO	TAL CC

Client Sample ID: AOC-EMWL-9T-130 — Lab Sample ID: 560-43178-4

Date Collected: 10/16/13 12:15 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	93973	10/18/13 18:23	RJT	TAL CC
Total/NA	Analysis	9251		200	94056	10/21/13 12:02	LPO	TAL CC

Client Sample ID: AOC-EMWL-6T-110 — Lab Sample ID: 560-43178-5

Date Collected: 10/16/13 14:25 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	93973	10/18/13 18:48	RJT	TAL CC
Total/NA	Analysis	9251		100	94056	10/21/13 11:47	LPO	TAL CC

Client Sample ID: AOC-EMWL41T-100 — Lab Sample ID: 560-43178-6

Date Collected: 10/16/13 15:20 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	94013	10/19/13 15:40	ANT	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-43178-1
SDG: October 2013

Client Sample ID: AOC-EMWL41T-101 — Lab Sample ID: 560-43178-7

Date Collected: 10/16/13 15:20 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	93973	10/18/13 19:13	RJT	TAL CC

Client Sample ID: AOC-EMWL38T-103 — Lab Sample ID: 560-43178-8

Date Collected: 10/16/13 17:05 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	94013	10/19/13 11:04	ANT	TAL CC

Client Sample ID: AOC-EMWU6T-113 — Lab Sample ID: 560-43178-9

Date Collected: 10/16/13 14:20 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	94014	10/19/13 11:25	ANT	TAL CC

Client Sample ID: AOC-MWU36-100 — Lab Sample ID: 560-43178-10

Date Collected: 10/16/13 15:05 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		20	94019	10/20/13 17:49	ANT	TAL CC

Client Sample ID: AOC-MWU36-101 — Lab Sample ID: 560-43178-11

Date Collected: 10/16/13 15:05 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		20	94019	10/20/13 18:14	ANT	TAL CC

Client Sample ID: AOC-EMWU32T-090 — Lab Sample ID: 560-43178-12

Date Collected: 10/16/13 15:55 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	94013	10/19/13 16:55	ANT	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-43178-1
SDG: October 2013

Client Sample ID: AOC-EMWL37T-100 — Lab Sample ID: 560-43178-13

Date Collected: 10/17/13 08:30 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	93973	10/18/13 19:38	RJT	TAL CC

Client Sample ID: AOC-EMWL35B-100 — Lab Sample ID: 560-43178-14

Date Collected: 10/17/13 09:50 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		50	94013	10/19/13 17:20	ANT	TAL CC

Client Sample ID: AOC-EMWL34T-100 — Lab Sample ID: 560-43178-15

Date Collected: 10/17/13 10:57 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5000	94013	10/19/13 17:45	ANT	TAL CC

Client Sample ID: AOC-EMWL36T-100 — Lab Sample ID: 560-43178-16

Date Collected: 10/17/13 12:20 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10000	94013	10/19/13 18:10	ANT	TAL CC

Client Sample ID: AOC-EMWL-39T-110 — Lab Sample ID: 560-43178-17

Date Collected: 10/17/13 14:00 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	93973	10/18/13 20:03	RJT	TAL CC

Client Sample ID: AOC-OWL14R-090 — Lab Sample ID: 560-43178-18

Date Collected: 10/17/13 15:10 — **Matrix: Water**
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	94013	10/19/13 11:29	ANT	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-43178-1
SDG: October 2013

Client Sample ID: AOC-MWU29-011

Lab Sample ID: 560-43178-19

Date Collected: 10/17/13 16:03
Matrix: Water
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	94013	10/19/13 18:35	ANT	TAL CC

Client Sample ID: AOC-MWU29-010

Lab Sample ID: 560-43178-20

Date Collected: 10/17/13 16:03
Matrix: Water
Date Received: 10/17/13 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	94013	10/19/13 19:00	ANT	TAL CC
Total/NA	Analysis	9251		100	94056	10/21/13 11:47	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: 560-43178-1
SDG: October 2013

Laboratory: TestAmerica Corpus Christi

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-13
Oklahoma	State Program	6	9968	08-31-14
Texas	NELAP	6	T104704210-12-8	03-31-14
USDA	Federal		P330-11-00060	02-03-14

Method Summary

Client: URS Corporation
Project/Site: Elementis AOC Groundwater

TestAmerica Job ID: 560-43178-1
SDG: October 2013

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC
9251	Chloride	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: 560-43178-1
SDG: October 2013

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-43178-1	AOC-OWL08-110	Water	10/16/13 10:00	10/17/13 16:30
560-43178-2	AOC-1013-TB01	Water	10/16/13 09:00	10/17/13 16:30
560-43178-3	AOC-EMWL8T-130	Water	10/16/13 10:45	10/17/13 16:30
560-43178-4	AOC-EMWL-9T-130	Water	10/16/13 12:15	10/17/13 16:30
560-43178-5	AOC-EMWL-6T-110	Water	10/16/13 14:25	10/17/13 16:30
560-43178-6	AOC-EMWL41T-100	Water	10/16/13 15:20	10/17/13 16:30
560-43178-7	AOC-EMWL41T-101	Water	10/16/13 15:20	10/17/13 16:30
560-43178-8	AOC-EMWL38T-103	Water	10/16/13 17:05	10/17/13 16:30
560-43178-9	AOC-EMWU6T-113	Water	10/16/13 14:20	10/17/13 16:30
560-43178-10	AOC-MWU36-100	Water	10/16/13 15:05	10/17/13 16:30
560-43178-11	AOC-MWU36-101	Water	10/16/13 15:05	10/17/13 16:30
560-43178-12	AOC-EMWU32T-090	Water	10/16/13 15:55	10/17/13 16:30
560-43178-13	AOC-EMWL37T-100	Water	10/17/13 08:30	10/17/13 16:30
560-43178-14	AOC-EMWL35B-100	Water	10/17/13 09:50	10/17/13 16:30
560-43178-15	AOC-EMWL34T-100	Water	10/17/13 10:57	10/17/13 16:30
560-43178-16	AOC-EMWL36T-100	Water	10/17/13 12:20	10/17/13 16:30
560-43178-17	AOC-EMWL-39T-110	Water	10/17/13 14:00	10/17/13 16:30
560-43178-18	AOC-OWL14R-090	Water	10/17/13 15:10	10/17/13 16:30
560-43178-19	AOC-MWU29-011	Water	10/17/13 16:03	10/17/13 16:30
560-43178-20	AOC-MWU29-010	Water	10/17/13 16:03	10/17/13 16:30

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-43178-1
SDG Number: October 2013

Login Number: 43178
List Number: 1
Creator: Wing, Randi

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.	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	
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	

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

Chain of Custo

560-43178 Chain of Custody

TestAmerica THE LEADER IN ENV

Loc: 560
43178

Client Information	Sampler: Lic Rinehart	Lab PM: Kellogg, Timothy L.	COC No: 560-11290-862.1
Client Contact: David Zuvanich	Phone: 210-219-1561	E-Mail: tim.kellogg@testamericainc.com	Page: Page 1 of _
Company: El Paso Energy Corporation			Job #: 41011010.0606602
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 #: C-TEST-ELEMENTIS-017 CC06 ST09		
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 - Bz	SW9251 - Cl unreserved										Total Number of containers	Special Instructions/Note:
			Preservation Code:				N												
~~OWL~~ AOC-OWL08-110	10/16/13	1000	G	Water			X	X										4	
AOC-1013-TB01		0900	—	Water			X											2	
AOC-EMWL8T-130		1045	G	Water			X	X										4	
AOC-EMWL9T-130		1215	G	Water			X	X										4	
AOC-EMWL6T-110		1425	G	Water			X	X										4	
AOC-EMWL41T-100		1520	G	Water			X											3	
AOC-EMWL41T-101		1520	G	Water			X											3	
AOC-EMWL38T-103		1705	G	Water		Y	X											6	MS/MSD
AOC-EMWU6T-113		1420	G	Water		Y	X											6	MS/MSD
AOC-MWU36-100		1505	G	Water			X											3	
AOC-MWU36-101		1505	G	Water			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, TRRP Report

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	10-17-13/1610	URS	[signature]	10-17-13/1610	URS
[signature]	10/17/13 1630	URS	[signature]	10-17-13 16:30	TACC

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.2 / 3.4 IRC NA

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

They are included in the cooler. Ignore lines through them

Client Information	Sampler: Liz Rinehart	Lab PM: Kellogg, Timothy L.	Carrier Tracking No(s):	COC No: 560-11290-862.1
Client Contact: David Zuvanich	Phone: 210-219-1561	E-Mail: tim.kellogg@testamericainc.com		Page: Page 2 of _
Company: El Paso Energy Corporation				Job #: 410 11010.0606602
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 #: C-TEST-ELEMENTIS-017 CC06 ST09			
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 - Bz, unpreserved	SW9251 - Cl	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N			
AOC-EMWL32T-090	10/16/13	1555	G	Water			X		3	
AOC-EMWL37T-100	10/17/13	0830	G	Water			X		3	
AOC-EMWL35B-100		0950	G	Water			X		3	
AOC-EMWL34T-100		1057	G	Water			X		3	
AOC-EMWL36T-100		1220	G	Water			X		3	
AOC-EMWL39T-110		1400	G	Water			X		3	
AOC-OWL14R-090		1510	G	Water			X		3	
~~AOC-MWL29-011~~		~~1603~~	~~G~~	~~Water~~			~~X~~		~~3~~	~~don't~~ no Cl sample
~~AOC-MWL29-010~~		~~1603~~	~~G~~	~~Water~~			~~X~~	~~X~~	~~4~~	
				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, TRRP Report

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	10-17-13/1810	URS	[signature]	10-17-13/1810	URS
[signature]	10/17/13 1630	URS	[signature]	10-17-13 16:30	TACC

Custody Seals Intact:	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
Δ Yes Δ No		3.2 / 3.4 FRC NA

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: 560-43196-1
TestAmerica Sample Delivery Group: October 2013
Client Project/Site: AOC Elementis Groundwater

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

Attn: Ms. Jean Youngerman

Authorized for release by:
10/28/2013 5:36:58 PM

Timothy Kellogg, Lab Director
(361)289-2673
tim.kellogg@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: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

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.

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)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Corpus Christi
TRRP Data Package Cover Page

Job Number: 560-43196-1
Project Name/Number: Elementis AOC Groundwater – Oct. 2013

This Data Package consists of:

This signature page, the laboratory review checklist, and the following Reportable Data:

- ☒ R1 Field Chain-of-Custody Form
- ☒ 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
  - d) The laboratory's LCS QC limits
- ☒ R7 Test Reports for 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 sample,
  - d) Calculated %Rs and relative percent differences (RPDs), and
  - e) The laboratory's MS/MSD QC limits
- ☒ R8 Laboratory analytical duplicates (if applicable) recovery and precision, including:
  - 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 limit (MQL) 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 the 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 the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory is NELAC accredited under 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 has been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm, to the best of my knowledge, that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld."

Timothy L. Kellogg	Timothy L. Kellogg	10/28/2013
Name (printed)	Signature	Date

Laboratory Director
Official Title (printed)

LRC Date: October 28, 2013	Laboratory Job Number: 560-43196-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater – October 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	**OI**	**CHAIN-OF-CUSTODY (C-O-C)**					
		1) Did all samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				1
		2) Were all departures from standard conditions described in an exception report or case narrative?	X				
R2	**OI**	**SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	**OI**	**TEST REPORTS**					
		1) Were all samples prepared and analyzed within holding time?	X				
		2) Other than those results <MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample quantitation limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035			X		
		9) If required for the project, TICs reported?			X		
R4	**O**	**SURROGATE RECOVERY DATA**					
		1) Were surrogates added prior to extraction?	X				
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	**OI**	**TEST REPORTS/SUMMARY FORMS FOR BLANK SAMPLES**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations <MQL?	X				
R6	**OI**	**LABORATORY CONTROL SAMPLES (LCS)**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits?	X				
R7	**OI**	**MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD) DATA**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	**OI**	**ANALYTICAL DUPLICATE DATA**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	**OI**	**METHOD QUANTITATION LIMITS (MQLs)**					
		1) Are the MQLs for each method analyte listed and included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCS included in the laboratory data package?	X				

LRC Date: October 28, 2013	Laboratory Job Number: 560-43196-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater – October 2013

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R10	**OI**	**OTHER PROBLEMS/ANOMALIES**					
		1) Are all known problems/anomalies/special conditions noted in this LRC, ER, or case narrative?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
S1	**OI**	**INITIAL CALIBRATION (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within the QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	**OI**	**INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV and CCV) AND CONTINUING CALIBRATION BLANK (CCB)**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analytes within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB <MDL?	X				
S3	**O**	**MASS SPECTRAL TUNING**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	**O**	**INTERNAL STANDARDS (IS)**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	**OI**	**RAW DATA (NELAC SECTION 5.5.10)**					
		1) Were the raw data (e.g. chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	**O**	**DUAL COLUMN CONFIRMATION**					
		1) Did dual column confirmation results meet the method-required QC?	X				
S7	**O**	**TENTATIVELY IDENTIFIED COMPOUNDS (TICs)**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	**I**	**INTERFERENCE CHECK SAMPLE (ICS) RESULTS**					
		1) Were percent recoveries within method QC limits?			X		
S9	**I**	**SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	**OI**	**METHOD DETECTION LIMIT (MDL) STUDIES**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCS?	X				
S11	**OI**	**PROFICIENCY TEST REPORTS**					
		1) Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	**OI**	**STANDARDS DOCUMENTATION**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	**OI**	**COMPOUND/ANALYTE IDENTIFICATION PROCEDURES**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	**OI**	**DEMONSTRATION OF ANALYST COMPETENCY (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5?	X				

LRC Date: October 28, 2013	Laboratory Job Number: 560-43196-1
Reviewer Name: Timothy L. Kellogg	Project Name/Number: Elementis AOC Groundwater – October 2013

		2) Is documentation of the analyst's competency up-to-date and on file?	X					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S15	**OI**	**VERIFICATION/VALIDATION DOCUMENTATION FOR METHODS (NELAC CHAPTER 5)**					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	**OI**	**LABORATORY STANDARD OPERATING PROCEDURES (SOPs)**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

EXCEPTION REPORTS

ER#[5]	DESCRIPTION
1	Sample Receipt: The samples were received on 10/18/2013 12:35 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6° C.

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable)
3 NA = Not applicable
4 NR = Not reviewed
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked)

Client Sample Results

Client: URS Corporation
Project/Site: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

Client Sample ID: AOC-1013-TB02

Lab Sample ID: 560-43196-1
Date Collected: 10/17/13 16:30
Matrix: Water
Date Received: 10/18/13 12:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/21/13 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*10/21/13 18:12*	*1*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*10/21/13 18:12*	*1*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*10/21/13 18:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 140*		*10/21/13 18:12*	*1*

Client Sample ID: AOC-EPZ08-020

Lab Sample ID: 560-43196-2
Date Collected: 10/17/13 17:16
Matrix: Water
Date Received: 10/18/13 12:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**439**		1.00	0.140	ug/L			10/21/13 18:36	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*91*		*70 - 130*		*10/21/13 18:36*	*5*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*		*10/21/13 18:36*	*5*
Dibromofluoromethane (Surr)	*104*		*70 - 130*		*10/21/13 18:36*	*5*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 140*		*10/21/13 18:36*	*5*

General Chemistry

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**16700**		20.0	5.00	mg/L			10/21/13 11:39	100

Client Sample ID: AOC-EMWU4T-090

Lab Sample ID: 560-43196-3
Date Collected: 10/18/13 08:35
Matrix: Water
Date Received: 10/18/13 12:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**15100**		1.00	0.140	ug/L			10/22/13 13:40	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*91*		*70 - 130*		*10/22/13 13:40*	*200*
Toluene-d8 (Surr)	*91*		*70 - 130*		*10/22/13 16:09*	*200*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*10/22/13 13:40*	*200*
4-Bromofluorobenzene (Surr)	*87*		*70 - 130*		*10/22/13 16:09*	*200*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*10/22/13 13:40*	*200*
Dibromofluoromethane (Surr)	*101*		*70 - 130*		*10/22/13 16:09*	*200*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*		*10/22/13 13:40*	*200*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 140*		*10/22/13 16:09*	*200*

General Chemistry

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**232**		20.0	5.00	mg/L			10/21/13 11:40	4

Client Sample Results

Client: URS Corporation
Project/Site: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

Client Sample ID: AOC-PZ09-030

Lab Sample ID: 560-43196-4
Date Collected: 10/18/13 09:15
Matrix: Water
Date Received: 10/18/13 12:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	484000		1.00	0.140	ug/L			10/21/13 19:26	5000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*10/21/13 19:26*	*5000*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*		*10/21/13 19:26*	*5000*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*10/21/13 19:26*	*5000*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 140*		*10/21/13 19:26*	*5000*

General Chemistry

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17700		20.0	5.00	mg/L			10/21/13 11:42	100

Client Sample ID: AOC-CL-FLUME-010

Lab Sample ID: 560-43196-5
Date Collected: 10/18/13 09:45
Matrix: Water
Date Received: 10/18/13 12:35

General Chemistry

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	27100		20.0	5.00	mg/L			10/21/13 12:01	200

Client Sample ID: AOC-RI-030

Lab Sample ID: 560-43196-6
Date Collected: 10/18/13 10:20
Matrix: Water
Date Received: 10/18/13 12:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1140000		1.00	0.140	ug/L			10/21/13 19:51	10000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*92*		*70 - 130*		*10/21/13 19:51*	*10000*
4-Bromofluorobenzene (Surr)	*87*		*70 - 130*		*10/21/13 19:51*	*10000*
Dibromofluoromethane (Surr)	*105*		*70 - 130*		*10/21/13 19:51*	*10000*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*10/21/13 19:51*	*10000*

General Chemistry

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6640		20.0	5.00	mg/L			10/21/13 11:43	100

Client Sample ID: AOC-EMW48-020

Lab Sample ID: 560-43196-7
Date Collected: 10/18/13 10:35
Matrix: Water
Date Received: 10/18/13 12:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1130000		1.00	0.140	ug/L			10/21/13 20:16	10000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*93*		*70 - 130*		*10/21/13 20:16*	*10000*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*		*10/21/13 20:16*	*10000*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*10/21/13 20:16*	*10000*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*		*10/21/13 20:16*	*10000*

Client Sample Results

Client: URS Corporation
Project/Site: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

Client Sample ID: AOC-EMW48-020

Lab Sample ID: 560-43196-7
Date Collected: 10/18/13 10:35
Matrix: Water
Date Received: 10/18/13 12:35

General Chemistry

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6160		20.0	5.00	mg/L			10/21/13 11:43	100

Client Sample ID: AOC-MWU32-030

Lab Sample ID: 560-43196-8
Date Collected: 10/18/13 11:00
Matrix: Water
Date Received: 10/18/13 12:35

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	233000		1.00	0.140	ug/L			10/21/13 20:42	2000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*92*		*70 - 130*		*10/21/13 20:42*	*2000*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*		*10/21/13 20:42*	*2000*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*10/21/13 20:42*	*2000*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*10/21/13 20:42*	*2000*

General Chemistry

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4660		20.0	5.00	mg/L			10/21/13 11:44	100

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

Lab Sample ID: MB 560-94020/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94020

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/21/13 15:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*70 - 130*		*10/21/13 15:16*	*1*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*10/21/13 15:16*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 130*		*10/21/13 15:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 140*		*10/21/13 15:16*	*1*

Lab Sample ID: LCS 560-94020/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94020

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	28.57		ug/L		114	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*70 - 130*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*

Lab Sample ID: MB 560-94088/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94088

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			10/22/13 12:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*10/22/13 12:00*	*1*
4-Bromofluorobenzene (Surr)	*88*		*70 - 130*		*10/22/13 12:00*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*10/22/13 12:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 140*		*10/22/13 12:00*	*1*

Lab Sample ID: LCS 560-94088/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94088

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	26.09		ug/L		104	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*95*		*70 - 130*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*
Dibromofluoromethane (Surr)	*98*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 140*

QC Sample Results

Client: URS Corporation
Project/Site: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

Method: 9251 - Chloride

Lab Sample ID: MB 560-94056/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94056

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.00	U	20.0	5.00	mg/L			10/21/13 11:38	1

Lab Sample ID: LCS 560-94056/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94056

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			150	156.7		mg/L		104	85 - 115		

Lab Sample ID: 560-43196-3 MS — **Client Sample ID: AOC-EMWU4T-090**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94056

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	232		800	1059		mg/L		103	85 - 115		

Lab Sample ID: 560-43196-3 MSD — **Client Sample ID: AOC-EMWU4T-090**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94056

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	232		800	1058		mg/L		103	85 - 115	0	30

QC Association Summary

Client: URS Corporation
Project/Site: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

GC/MS VOA

Analysis Batch: 94020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43196-1	AOC-1013-TB02	Total/NA	Water	8260B	
560-43196-2	AOC-EPZ08-020	Total/NA	Water	8260B	
560-43196-4	AOC-PZ09-030	Total/NA	Water	8260B	
560-43196-6	AOC-RI-030	Total/NA	Water	8260B	
560-43196-7	AOC-EMW48-020	Total/NA	Water	8260B	
560-43196-8	AOC-MWU32-030	Total/NA	Water	8260B	
LCS 560-94020/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-94020/8	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 94088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43196-3	AOC-EMWU4T-090	Total/NA	Water	8260B	
560-43196-3	AOC-EMWU4T-090	Total/NA	Water	8260B	
LCS 560-94088/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-94088/8	Method Blank	Total/NA	Water	8260B	

General Chemistry

Analysis Batch: 94056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-43196-2	AOC-EPZ08-020	Total/NA	Water	9251	
560-43196-3	AOC-EMWU4T-090	Total/NA	Water	9251	
560-43196-3 MS	AOC-EMWU4T-090	Total/NA	Water	9251	
560-43196-3 MSD	AOC-EMWU4T-090	Total/NA	Water	9251	
560-43196-4	AOC-PZ09-030	Total/NA	Water	9251	
560-43196-5	AOC-CL-FLUME-010	Total/NA	Water	9251	
560-43196-6	AOC-RI-030	Total/NA	Water	9251	
560-43196-7	AOC-EMW48-020	Total/NA	Water	9251	
560-43196-8	AOC-MWU32-030	Total/NA	Water	9251	
LCS 560-94056/4	Lab Control Sample	Total/NA	Water	9251	
MB 560-94056/3	Method Blank	Total/NA	Water	9251	

Lab Chronicle

Client: URS Corporation
Project/Site: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

Client Sample ID: AOC-1013-TB02 — Lab Sample ID: 560-43196-1

Date Collected: 10/17/13 16:30 — **Matrix: Water**
Date Received: 10/18/13 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	94020	10/21/13 18:12	RJT	TAL CC

Client Sample ID: AOC-EPZ08-020 — Lab Sample ID: 560-43196-2

Date Collected: 10/17/13 17:16 — **Matrix: Water**
Date Received: 10/18/13 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	94020	10/21/13 18:36	RJT	TAL CC
Total/NA	Analysis	9251		100	94056	10/21/13 11:39	LPO	TAL CC

Client Sample ID: AOC-EMWU4T-090 — Lab Sample ID: 560-43196-3

Date Collected: 10/18/13 08:35 — **Matrix: Water**
Date Received: 10/18/13 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		200	94088	10/22/13 13:40	RJT	TAL CC
Total/NA	Analysis	8260B		200	94088	10/22/13 16:09	RJT	TAL CC
Total/NA	Analysis	9251		4	94056	10/21/13 11:40	LPO	TAL CC

Client Sample ID: AOC-PZ09-030 — Lab Sample ID: 560-43196-4

Date Collected: 10/18/13 09:15 — **Matrix: Water**
Date Received: 10/18/13 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5000	94020	10/21/13 19:26	RJT	TAL CC
Total/NA	Analysis	9251		100	94056	10/21/13 11:42	LPO	TAL CC

Client Sample ID: AOC-CL-FLUME-010 — Lab Sample ID: 560-43196-5

Date Collected: 10/18/13 09:45 — **Matrix: Water**
Date Received: 10/18/13 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9251		200	94056	10/21/13 12:01	LPO	TAL CC

Client Sample ID: AOC-RI-030 — Lab Sample ID: 560-43196-6

Date Collected: 10/18/13 10:20 — **Matrix: Water**
Date Received: 10/18/13 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10000	94020	10/21/13 19:51	RJT	TAL CC
Total/NA	Analysis	9251		100	94056	10/21/13 11:43	LPO	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

Client Sample ID: AOC-EMW48-020

Lab Sample ID: 560-43196-7

Date Collected: 10/18/13 10:35
Date Received: 10/18/13 12:35

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10000	94020	10/21/13 20:16	RJT	TAL CC
Total/NA	Analysis	9251		100	94056	10/21/13 11:43	LPO	TAL CC

Client Sample ID: AOC-MWU32-030

Lab Sample ID: 560-43196-8

Date Collected: 10/18/13 11:00
Date Received: 10/18/13 12:35

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2000	94020	10/21/13 20:42	RJT	TAL CC
Total/NA	Analysis	9251		100	94056	10/21/13 11:44	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: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

Laboratory: TestAmerica Corpus Christi

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-13
Oklahoma	State Program	6	9968	08-31-14
Texas	NELAP	6	T104704210-12-8	03-31-14
USDA	Federal		P330-11-00060	02-03-14

Method Summary

Client: URS Corporation
Project/Site: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CC
9251	Chloride	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: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-43196-1	AOC-1013-TB02	Water	10/17/13 16:30	10/18/13 12:35
560-43196-2	AOC-EPZ08-020	Water	10/17/13 17:16	10/18/13 12:35
560-43196-3	AOC-EMWU4T-090	Water	10/18/13 08:35	10/18/13 12:35
560-43196-4	AOC-PZ09-030	Water	10/18/13 09:15	10/18/13 12:35
560-43196-5	AOC-CL-FLUME-010	Water	10/18/13 09:45	10/18/13 12:35
560-43196-6	AOC-RI-030	Water	10/18/13 10:20	10/18/13 12:35
560-43196-7	AOC-EMW48-020	Water	10/18/13 10:35	10/18/13 12:35
560-43196-8	AOC-MWU32-030	Water	10/18/13 11:00	10/18/13 12:35

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

Loc: 560
43196

Client Information	Sampler: Liz Pirtmont	Lab PM: Kellogg, Timothy L.	Carrier Tracking No(s):	COC No: 560-11290-862.1
Client Contact: David Zuvanich	Phone: 210-219-1541	E-Mail: tim.kellogg@testamericainc.com		Page: Page 1 of 1
Company: El Paso Energy Corporation				Job #: 41011010.0606602
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 #: C-TEST-ELEMENTIS-017 CC06 ST09			
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 - Bz		Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
AOC-1013-TB-E	10/18/13	1100	G	Water			X		2	
AOC-EB03-GW	↓	1115	G	Water			X	X	4	
AOC-EMW01-GW	10/18/13	0935	G	Water			X	X	4	
AOC-PW04-GW		1145	G	Water			X	X	4	
AOC-CL-FLUME-GW		0945	G	Water				X	1	
AOC-RI-GW		1030	G	Water			X	X	4	
AOC-EMW05-GW		1135	G	Water			X	X	4	
AOC-MW-1001-GW		1100	G	Water			X	X	4	
				Water						
				Water						
				Water						

560-43196 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, TRRP Report

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[illegible]	10-18-13/1235	WRS	[illegible]	10/18/13 1235	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'd Cor 1.6°C IR4

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-43196-1
SDG Number: October 2013

Login Number: 43196
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.	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	

Default Detection Limits

Client: URS Corporation
Project/Site: AOC Elementis Groundwater

TestAmerica Job ID: 560-43196-1
SDG: October 2013

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	20.0	5.00	mg/L	9251

DUS for the AOC Groundwater Sampling Event
January 2014

Data Usability Summary for the AOC Groundwater Sampling Event – January 2014

El Paso Merchant Energy-Petroleum Company/Elementis
Corpus Christi, Texas

March 2014

Prepared for:
El Paso Corporation
Houston, Texas

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

Data Usability Summary for AOC Groundwater Sampling Event – January 2014

This Data Usability Summary describes the data quality for groundwater results from samples collected during the January 2014 Administrative Order of 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 5 samples, 1 field duplicate, and 1 trip blank were collected. The samples were collected from 13 January to 14 January 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 IDs

Sample ID	Laboratory ID	Date Sampled	Benzene SW8260B
AOC-EMW49-020	560-44796-6	1/14/2013	X
AOC-EMW50-070	560-44796-4	1/14/2013	X
AOC-EW9-020	560-44796-5	1/14/2013	X
AOC-MWU28-043	560-44796-2	1/13/2013	X
AOC-MWU31-100	560-44796-1	1/13/2013	X
Field Duplicates			
AOC-EMW49-021	560-44796-3	1/14/2013	X
Trip Blanks			
AOC-TB01	560-44796-7	1/14/2013	X

Sample IDs ending in -xx3 are client-specified Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples.
SW - U.S. Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, 1986 and subsequent revisions.
ID - Identification.

Data Usability Summary

The following information provides a summary of quality control (QC) results applied to the groundwater samples collected during the January 2014 AOC 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

Seven samples 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.

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	EP	EP
LOCATION ID	EMW-49	EMW-49	EMW-50	EW9
SAMPLE ID	AOC-EMW-49-020	AOC-EMW49-021 Dup of AOC-EMW-49-020	AOC-EMW50-070	AOC-EW9-020
DATE SAMPLED	14-JAN-14	14-JAN-14	14-JAN-14	14-JAN-14
PARAMETER				
SW8260B - Volatile Organic Compounds (ug/L)				
Benzene	ND U (0.140)[1]	ND U (0.140)[1]	0.326 J (0.140)[1]	1200 (1.40)[10]

	SITE ID					
	LOCATION ID					
	SAMPLE ID					
	DATE SAMPLED					
PARAMETER	OffELM_O			OffELM_O		
	MWU28			MW-U31		
	AOC-MWU28-043			AOC-MWU31-100		
	13-JAN-14			13-JAN-14		
SW8260B - Volatile Organic Compounds (ug/L)						
Benzene	3.74	(0.140	)[1]	14400	(14.0	)[100]

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: 560-44796-1
Client Project/Site: Elementis Groundwater

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

Attn: Ms. Jean Youngerman

Authorized for release by:
1/16/2014 8:14:25 AM

Timothy Kellogg, Lab Director
(361)289-2673
tim.kellogg@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: 560-44796-1

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.

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)

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

This data package is for TestAmerica Corpus Christi job number 560-44796-1 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.

Timothy L. Kellogg		1/16/2014
Name (printed)	Signature	Date

Lab Director
Official Title (printed)

Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	1/16/2014
Project Name:	Elementis Groundwater	Laboratory Job Number:	560-44796-1
Reviewer Name:	Timothy L. Kellogg		

#[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:	1/16/2014
Project Name:	Elementis Groundwater	Laboratory Job Number:	560-44796-1
Reviewer Name:	Timothy L. Kellogg		

#[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);
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Laboratory Review Checklist: Exception Reports - Page 4 of 4

Laboratory Name:	TestAmerica Corpus Christi	LRC Date:	1/16/2014
Project Name:	Elementis Groundwater	Laboratory Job Number:	560-44796-1
Reviewer Name:	Timothy L. Kellogg		

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.
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).

Client Sample Results

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-44796-1

Client Sample ID: AOC-MWU31-100

Lab Sample ID: 560-44796-1
Date Collected: 01/13/14 12:18
Matrix: Water
Date Received: 01/14/14 12:45

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	14400		1.00	0.140	ug/L			01/15/14 13:56	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*70 - 130*		*01/15/14 13:56*	*100*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*		*01/15/14 13:56*	*100*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*01/15/14 13:56*	*100*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 140*		*01/15/14 13:56*	*100*

Client Sample ID: AOC-MWU28-043

Lab Sample ID: 560-44796-2
Date Collected: 01/13/14 13:37
Matrix: Water
Date Received: 01/14/14 12:45

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	3.74		1.00	0.140	ug/L			01/15/14 11:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*01/15/14 11:26*	*1*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*		*01/15/14 11:26*	*1*
Dibromofluoromethane (Surr)	*101*		*70 - 130*		*01/15/14 11:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*01/15/14 11:26*	*1*

Client Sample ID: AOC-EMW49-021

Lab Sample ID: 560-44796-3
Date Collected: 01/14/14 11:12
Matrix: Water
Date Received: 01/14/14 12:45

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			01/15/14 12:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*01/15/14 12:16*	*1*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*		*01/15/14 12:16*	*1*
Dibromofluoromethane (Surr)	*103*		*70 - 130*		*01/15/14 12:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*		*01/15/14 12:16*	*1*

Client Sample ID: AOC-EMW50-070

Lab Sample ID: 560-44796-4
Date Collected: 01/14/14 09:31
Matrix: Water
Date Received: 01/14/14 12:45

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.326	J	1.00	0.140	ug/L			01/15/14 12:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*01/15/14 12:41*	*1*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*01/15/14 12:41*	*1*
Dibromofluoromethane (Surr)	*101*		*70 - 130*		*01/15/14 12:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*01/15/14 12:41*	*1*

Client Sample Results

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-44796-1

Client Sample ID: AOC-EW9-020

Lab Sample ID: 560-44796-5
Date Collected: 01/14/14 08:15
Matrix: Water
Date Received: 01/14/14 12:45

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1200		1.00	0.140	ug/L			01/15/14 13:32	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*70 - 130*		*01/15/14 13:32*	*10*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*		*01/15/14 13:32*	*10*
Dibromofluoromethane (Surr)	*104*		*70 - 130*		*01/15/14 13:32*	*10*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 140*		*01/15/14 13:32*	*10*

Client Sample ID: AOC-EMW-49-020

Lab Sample ID: 560-44796-6
Date Collected: 01/14/14 11:12
Matrix: Water
Date Received: 01/14/14 12:45

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			01/15/14 13:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*70 - 130*		*01/15/14 13:06*	*1*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*		*01/15/14 13:06*	*1*
Dibromofluoromethane (Surr)	*104*		*70 - 130*		*01/15/14 13:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 140*		*01/15/14 13:06*	*1*

Client Sample ID: AOC-TB01

Lab Sample ID: 560-44796-7
Date Collected: 01/14/14 10:55
Matrix: Water
Date Received: 01/14/14 12:45

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

Analyte	Result	Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			01/15/14 11:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*01/15/14 11:51*	*1*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*		*01/15/14 11:51*	*1*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*01/15/14 11:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 140*		*01/15/14 11:51*	*1*

QC Sample Results

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-44796-1

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

Lab Sample ID: MB 560-97235/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 97235

Analyte	MB Result	MB Qualifier	MQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.140	U	1.00	0.140	ug/L			01/15/14 11:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*70 - 130*		*01/15/14 11:01*	*1*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*01/15/14 11:01*	*1*
Dibromofluoromethane (Surr)	*101*		*70 - 130*		*01/15/14 11:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 140*		*01/15/14 11:01*	*1*

Lab Sample ID: LCS 560-97235/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 97235

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	24.44		ug/L		98	70 - 130

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

Lab Sample ID: 560-44796-2 MS — **Client Sample ID: AOC-MWU28-043**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 97235

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	3.74		25.0	30.49		ug/L		107	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*70 - 130*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 140*

Lab Sample ID: 560-44796-2 MSD — **Client Sample ID: AOC-MWU28-043**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 97235

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	3.74		25.0	29.04		ug/L		101	70 - 130	5	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*70 - 130*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
Dibromofluoromethane (Surr)	*101*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 140*

QC Association Summary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-44796-1

GC/MS VOA

Analysis Batch: 97235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
560-44796-1	AOC-MWU31-100	Total/NA	Water	8260B	
560-44796-2	AOC-MWU28-043	Total/NA	Water	8260B	
560-44796-2 MS	AOC-MWU28-043	Total/NA	Water	8260B	
560-44796-2 MSD	AOC-MWU28-043	Total/NA	Water	8260B	
560-44796-3	AOC-EMW49-021	Total/NA	Water	8260B	
560-44796-4	AOC-EMW50-070	Total/NA	Water	8260B	
560-44796-5	AOC-EW9-020	Total/NA	Water	8260B	
560-44796-6	AOC-EMW-49-020	Total/NA	Water	8260B	
560-44796-7	AOC-TB01	Total/NA	Water	8260B	
LCS 560-97235/3	Lab Control Sample	Total/NA	Water	8260B	
MB 560-97235/8	Method Blank	Total/NA	Water	8260B	

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-44796-1

Client Sample ID: AOC-MWU31-100 — Lab Sample ID: 560-44796-1

Date Collected: 01/13/14 12:18 — **Matrix: Water**
Date Received: 01/14/14 12:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		100	97235	01/15/14 13:56	RP56	TAL CC

Client Sample ID: AOC-MWU28-043 — Lab Sample ID: 560-44796-2

Date Collected: 01/13/14 13:37 — **Matrix: Water**
Date Received: 01/14/14 12:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	97235	01/15/14 11:26	RP56	TAL CC

Client Sample ID: AOC-EMW49-021 — Lab Sample ID: 560-44796-3

Date Collected: 01/14/14 11:12 — **Matrix: Water**
Date Received: 01/14/14 12:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	97235	01/15/14 12:16	RP56	TAL CC

Client Sample ID: AOC-EMW50-070 — Lab Sample ID: 560-44796-4

Date Collected: 01/14/14 09:31 — **Matrix: Water**
Date Received: 01/14/14 12:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	97235	01/15/14 12:41	RP56	TAL CC

Client Sample ID: AOC-EW9-020 — Lab Sample ID: 560-44796-5

Date Collected: 01/14/14 08:15 — **Matrix: Water**
Date Received: 01/14/14 12:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	97235	01/15/14 13:32	RP56	TAL CC

Client Sample ID: AOC-EMW-49-020 — Lab Sample ID: 560-44796-6

Date Collected: 01/14/14 11:12 — **Matrix: Water**
Date Received: 01/14/14 12:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	97235	01/15/14 13:06	RP56	TAL CC

Lab Chronicle

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-44796-1

Client Sample ID: AOC-TB01

Lab Sample ID: 560-44796-7

Date Collected: 01/14/14 10:55

Matrix: Water

Date Received: 01/14/14 12:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	97235	01/15/14 11:51	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 Groundwater

TestAmerica Job ID: 560-44796-1

Laboratory: TestAmerica Corpus Christi

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10362	10-31-14
Oklahoma	State Program	6	9968	08-31-14
Texas	NELAP	6	T104704210	03-31-14
USDA	Federal		P330-11-00060	02-03-14

Method Summary

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-44796-1

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 Groundwater

TestAmerica Job ID: 560-44796-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
560-44796-1	AOC-MWU31-100	Water	01/13/14 12:18	01/14/14 12:45
560-44796-2	AOC-MWU28-043	Water	01/13/14 13:37	01/14/14 12:45
560-44796-3	AOC-EMW49-021	Water	01/14/14 11:12	01/14/14 12:45
560-44796-4	AOC-EMW50-070	Water	01/14/14 09:31	01/14/14 12:45
560-44796-5	AOC-EW9-020	Water	01/14/14 08:15	01/14/14 12:45
560-44796-6	AOC-EMW-49-020	Water	01/14/14 11:12	01/14/14 12:45
560-44796-7	AOC-TB01	Water	01/14/14 10:55	01/14/14 12:45

Chain of Custody Record

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TestAmerica La

Loc: 560
44796

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
Company Name: URS	Tel/Fax:	Lab Contact:	Carrier:	1 of 1
Address:	Analysis Turnaround Time			Sampler:
City/State/Zip:	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone:	TAT if different from Below			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name:	☐ 1 week			
Site:	☒ 2 days			Job / SDG No.:
P O #	☐ 1 day			

560-44796 Chain of Custody

Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	8260B/8260C Benzene	Sample Specific Notes:
ACC-MW21-[illegible]	N	1/3/14	1218		WA	3	N	N	3	Benzene only
ACC-MW25-[illegible]	N	1/3/14	1337		WA	3	N	Y	6	MS/MSD Benzene
ACC-EMW4-[illegible]	N	1/4/14	1112		WA	3	N	N	3	Benzene only
ACC-EMW[illegible]	N	1/4/14	[illegible]		WA	3	N	N	3	Benzene only
ACC-EMW[illegible]	N	1/4/14	[illegible]	G	WA	3	N	N	3	Benzene only
ACC-EMW4-[illegible]	N	1/4/14	1112		WA	3	N	N	3	Benzene only
ACC-TB01	N	1/4/14	[illegible]		W	2	N	N	3	Trip Blank Benzene

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for_____ Months

Special Instructions/QC Requirements & Comments:
2 day TAT! ACC-MW25-[illegible] MS/MSD. 2.1/2.3 IR 4/NA

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	URS	1/4/14	[signature]	TACC	1/4/14 12:45
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 560-44796-1

Login Number: 44796

List Source: TestAmerica Corpus Christi

List Number: 1

Creator: Wing, Randi

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.	N/A	
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	
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	

Default Detection Limits

Client: URS Corporation
Project/Site: Elementis Groundwater

TestAmerica Job ID: 560-44796-1

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

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