

Environmental  
Resources  
Management

8425 Woodfield Crossing  
Boulevard, Suite 560 West  
Indianapolis, IN 46240  
(317) 706-2000  
(317) 706-2010 (fax)  
<http://www.erm.com>

*Via Email and FedEx*

September 27, 2016

Andrea Robertson  
Project Manager  
Indiana Brownfields Program  
100 North Senate Avenue, Room 1275  
Indianapolis, Indiana 46204



Reference: Transmittal of the Site Investigation Summary Report  
Former Reid Hospital Site  
Richmond, Indiana  
Brownfields Site #4131015

Ms. Robertson,

On behalf of Reid Health (Reid), Environmental Resources Management, Inc. (ERM) is transmitting you the Site Investigation Summary Report summarizing work conducted at the former Reid Hospital Site located at 1401 Chester Boulevard in Richmond, Indiana. The work summarized within the attached report was completed in accordance with the Investigation Work Plan (IWP), which was approved by the Indiana Brownfields Program (IBP) via email on June 10, 2016.

If you have any questions, or would like to discuss the contents of the enclosed report, please feel free to contact us.

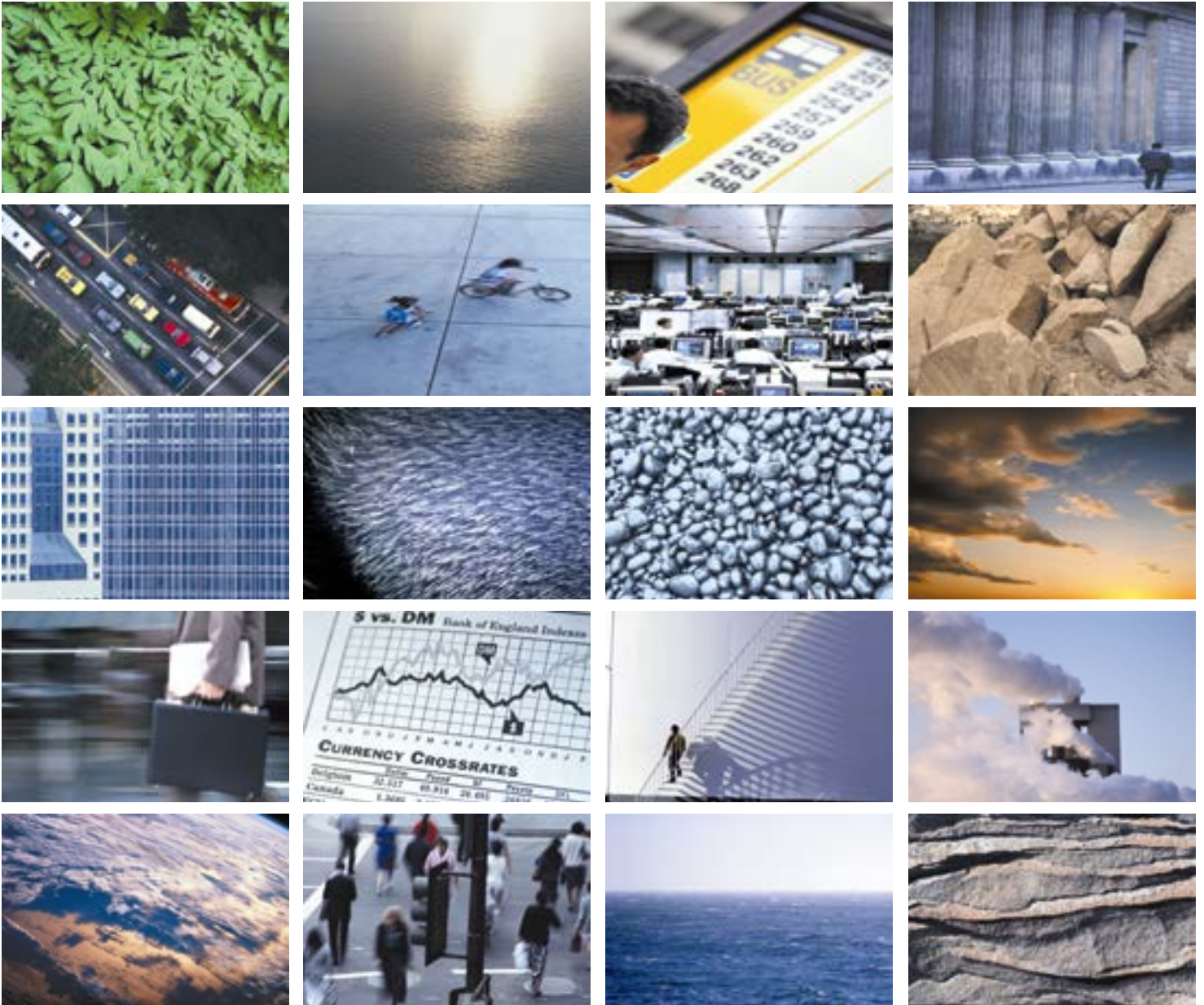
Sincerely,

A handwritten signature in black ink that reads "Aaron Friedrich".

Aaron P. Friedrich, LPG  
Senior Consultant

A handwritten signature in black ink that reads "John Markey".

John Markey  
Senior Partner



# Site Investigation Summary Report

September 27, 2016

Former Reid Hospital Site  
 1401 Chester Boulevard  
 Richmond, Indiana

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## **1.0 INTRODUCTION & BACKGROUND**

### **1.1 INTRODUCTION**

On behalf of Reid Health (Reid), Environmental Resources Management (ERM) is pleased to submit this Site Investigation Summary Report to the Indiana Brownfields Program (IBP) to present the findings from the investigation activities completed June 13 through July 7, 2016 at the former Reid Hospital site located at 1401 Chester Boulevard in Richmond, Indiana (hereinafter the "Site").

The purpose of the investigation was to further evaluate the findings and address the data gaps identified in the Phase II Environmental Site Assessment (Phase II ESA) dated August 29, 2014. A Site plan with the Phase II subsurface investigation locations is provided as Figure 1.

### **1.2 SITE HISTORY & DESCRIPTION**

According to the Phase I ESA and Phase II ESA completed at the Site by CardnoATC, the western half of the Site consists of 11 interconnected former hospital buildings surrounded by paved parking areas and access driveways. The buildings range from 1 to 7 vertical stories and were constructed between 1905 and 1983 through various facility expansions. Exterior finishes of the hospital buildings include brick, concrete, glass, metal, stone, clay tile roofing, and vinyl siding. Interior portions of the buildings consist of offices, a morgue, emergency facilities, laboratories, patient rooms, restrooms, operating rooms, maintenance areas, storage rooms, a gift shop, and lobby areas.

As presented in the Phase I ESA, a former power plant is located to the north of the vacant hospital buildings. The ground level floor of the power plant contained two water heater tanks and a deaerator tank. A maintenance building is located to the northeast of the power plant across a paved parking area. Wooded land surrounds the property with a steep south facing slope located along the northern boundary of the western portion of the property. Wooded land along the western boundary of the northeast portion of the property consists of a hillside that slopes steeply to the east. A paved parking lot and access drive is located on the southern portion of the eastern half of the property. The rest of the eastern half of the property consists of wooded land.

An access road branches to the north to an open area of land centrally located on the eastern half of the property. According to prior reports, this area was previously used to dump construction and demolition debris. The access road continues east along the river and leads to a residence located to the east of the property.

Reid began construction on a new hospital facility approximately 1.5 miles north of the Site in 2004, and the final relocation was completed in 2008. In 2006 the land and the on-Site buildings were sold to Whitewater Living Center, LLC, (Whitewater). Reid then leased the property back from Whitewater to complete the transition to Reid's new hospital campus; Reid completed that move and vacated the property on October 31, 2008. Shortly thereafter, in late 2008, Whitewater sold the property to Spring Grove Development, LLC (SGD). SGD abandoned its redevelopment plans and stopped paying property taxes in 2011. In 2014, Wayne County put the property up for a tax sale auction, but the property did not sell at the auction.

As of today, the Site buildings on the property are in poor condition and are generally unsafe for entry. While Reid has not owned in the property since 2006, Reid is cooperating with the IDEM and IBP in evaluating environmental Site conditions at the property. As part of that effort, Reid completed the work summarized herein.

### **1.3 SUMMARY OF THE PHASE I AND II ESA**

The IBP retained CardnoATC to complete a Phase I ESA in February 2014. The Phase I ESA report identified certain recognized environmental conditions (RECs) at the Site, which included:

- A former maintenance building,
- A suspected dry cleaning operation off-Site to the west/northwest,
- A suspected fill area within the southern half of the property,
- A former print shop located on-Site, and
- A dumping area on the eastern portion of the property in a cleared portion of the wooded land.

To further evaluate the RECs, CardnoATC completed a Limited Subsurface Investigation (LSI), which is summarized in the Phase II ESA, in which they excavated 10 test pits and installed 15 soil borings. A total of 15 surface soil samples, 15 subsurface soil samples, and 15 groundwater samples were collected from depths ranging from the surface to 30 feet below ground surface (ft bgs). Samples were screened in the field for the presence of total photoionizable vapors (TPVs), methane, and radioactivity (using a Geiger counter).

CardnoATC collected and analyzed soil and groundwater samples based on their proximity to on-Site RECs. Sample analytes included volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), priority

pollutant list (PPL) metals, polychlorinated biphenyls (PCBs), dioxins, lithium (groundwater only), and radionuclides (groundwater only).

CardnoATC's findings from the Phase II ESA were as follows:

- VOCs were not found to be a suite of COCs for the Site.
- The presence of thallium and arsenic in the subsurface soil as well as arsenic in groundwater near the former maintenance building do not pose a risk to human health or the environment as long as the future use of the property is limited to non-residential use and doesn't include groundwater use.
- Historic dry cleaning operations upgradient of the Site do not appear to have adversely affected soil and groundwater.
- The presence of fill material may warrant further evaluation due to the presence of dioxins and radionuclides in soil and groundwater.
- The presence of chemicals in soil and groundwater near the former print shop do not represent a risk to human health and the environment as long as the future use of the property is limited to non-residential use and doesn't include groundwater use.
- The presence of contaminants in soil and groundwater near the former dumping area on the eastern portion of the Site in a cleared portion of wooded land may require further evaluation.

#### **1.4 REGULATORY STATUS AND APPLICABLE SCREENING LEVELS**

After the 2014 Phase I and Phase II ESA activities were complete, IDEM issued a Special Notice of Liability (SNL) letter, dated May 14, 2015, that specifically identifies arsenic, asbestos, chromium, thallium, lead, Aroclor 1232, petroleum aromatic hydrocarbons (PAHs), dioxin, lithium, and radionuclides as the hazardous substances present at the Site. In response to the SNL, Reid retained ERM to prepare an Investigation Work Plan (IWP). The IWP was submitted to the IBP/IDEM on May 20, 2016 and subsequently approved, with minor revisions, via email on June 10, 2016.

With the exception of asbestos, each of the aforementioned hazardous substances were further investigated through the implementation of the IWP with the intent of 1) including or eliminating them as a Site constituent of concern (COC), 2) establishing that these materials are naturally occurring (e.g. background), or 3) requiring certain remedial activities or institutional controls (e.g. environmental restrictive covenants) to achieve Site closure through IDEM.

The work completed as part of the implementation of the IWP, and summarized herein, was completed consistent with current IDEM guidance including the Remediation Closure Guide (RCG) dated March 22, 2012 (with updates through July 9, 2012) and the Remediation Program Guide (RPG) dated February 2012. Analytical data collected and summarized herein was compared to the 2016 IDEM RCG screening levels, which are consistent with EPA Region 5 regional screening levels (RSLs). Where constituents have no IDEM screening levels (e.g. radiochemistry), ERM compared the analytical data either to published values supported by US EPA or to other conservative screening levels (SLs).

## 1.5 DATA GAPS FROM PREVIOUS INVESTIGATION WORK

Based on communication with IDEM, in consideration of the SNL, the key data gaps from Phase II ESA included the following:

1. The groundwater flow conditions presented in the Phase II ESA indicate a potentially dynamic flow condition, whereby multiple groundwater units are potentially present. CardnoATC did not confirm that the groundwater flow identified during the Phase II ESA was the result of a single groundwater unit or multiple groundwater units.
2. Based on the detections of radionuclides at the Site, the source of the radionuclide concentrations detected during the Phase II ESA was unknown. The radionuclide detections did not have a clear connection to the Nuclear Regulatory Commission (NRC) licenses previously retained by Reid. ERM's initial review of the analytical data indicated that the concentrations were likely natural decay products of pre-existing radiological material.
3. The presence of radionuclides and dioxins within the suspected fill area south of the former hospital buildings was not completely understood relative to the potential risks to human health and the environment following the completion of the Phase II ESA.
4. It was unclear whether it was appropriate for dioxins and furans (d/f) to be included as a Site COC based on the data included in the Phase II ESA. Minor detections of d/f were detected in soil, and the resulting toxicity equivalence (TEQ) calculations completed by ERM indicated d/f in soil was not likely a COC. One d/f congener was detected at an elevated concentration in one groundwater sample, which ERM asserted was likely the result of high turbidity. Based on the limited data, the lack of turbidity data, and the elevated laboratory reporting limits (RLs) relative to the TEQ calculations, d/f couldn't be ruled out as a potential Site COC in groundwater.

Through the implementation of ERM's field investigation and sampling activities, additional information has been obtained to evaluate these data gaps and understand the potential risks associated with previously detected compounds in soil and groundwater at the Site.

## 2.0 FIELD INVESTIGATION ACTIVITIES

During the Site investigation work summarized herein, ERM advanced 21 soil borings, installed 8 monitoring wells, collected groundwater samples from 7 of the monitoring wells, and collected 3 wipe samples. Soil, groundwater, and wipe samples were collected in accordance with the IDEM-approved Quality Assurance Project Plan (QAPP), which was attached to the IWP. The field investigation activities and analytical methods used during the implementation of the approved IWP are summarized in Sections 2.1 through 2.5.

### 2.1 SUBSURFACE UTILITY CLEARANCE

ERM utilized the Indiana 811 one-call system to identify the public utilities in the vicinity of the proposed investigation locations prior to conducting any subsurface work. As an added precaution, ERM contracted a private utility locator (Blood Hound, Inc.) to identify any private, underground utilities. In addition, ERM performed physical hand clearance at each boring location using a hand augur prior to the use of powered drilling equipment.

### 2.2 SOIL INVESTIGATION & SAMPLING

From June 13 to June 17, 2016, ERM advanced 21 soil borings (SB-16 through SB-36) via direct push drilling techniques (DPT). The soil boring locations are numerated to following the succession of boring identifications presented in the Phase II ESA. The Site investigation locations from ERM's Site work as well as those completed during the Phase II ESA are summarized on Figure 2.

As part of the soil screening process, ERM retained C.N. Associates, Inc. (CNA) to conduct a specific field screening assessment for the target radiological compounds. CNA began their work off-Site at various points to establish background concentrations in ambient air and near the ground. The intent was to compare the off-Site background concentrations to those concentrations present during the completion of the soil boring investigation. CNA utilized certified field staff to screen radiological materials in real time using a Ludlum® Model 23501-1.

Soil samples were collected and described in 2 ft increments from the surface to total depth of each soil boring. Soil descriptions, including the geology, color, staining, odor, density, grain size, sorting, composition, structure and moisture content, were summarized on boring logs in the field. A Munsell® color chart was used to accurately identify the color of the soil. A Foxboro® TVA 1000 photo ionization detector (PID)/flame ionization detector (FID) was used to approximately quantify, by the standard headspace method, the VOCs contained in each 2 ft soil increment. The results of the headspace method test were documented on soil boring logs in the field. CNA screened the same soils in 2 ft



increments alongside ERM's field geologist using the Ludlum® Model 23501-1. Soil boring logs completed as part of this investigation are included in Appendix A.

Soil samples were collected from the prescribed 2 ft intervals from Table 4 from the IDEM-approved IWP or in accordance with field screening and observations during the advancement of soil borings. A copy of the sampling matrix table is included herein as Appendix B for reference. Soil samples were submitted to TestAmerica, Inc. (TA) for analysis of boring-specific analytes specified in Appendix B. Soil samples were analyzed, where appropriate, using the methods summarized in Section 2.6.

Duplicate samples, matrix spike/matrix spike duplicates (MS/MSD), equipment, and rinsate blanks were collected in accordance with the IDEM-approved QAPP at a rate of 1 per 20 samples per analytical method. All samples were stored on ice using laboratory supplied containers. Soils not selected for analysis were containerized in 55 gallon drums, labeled as investigation derived waste (IDW) on hold pending analysis and temporarily staged on site.

In accordance with the approved IWP, no soil samples were submitted for analytical evaluation from soil borings SB-29 through SB-34 since the intent of these borings was to determine if fill was present. No soil samples were collected from SB-20 or SB-21 as the intent of these locations was to screen for the presence of radionuclides and install permanent monitoring wells to evaluate groundwater conditions and flow direction.

Unless the individual soil boring was intended for conversion to a monitoring well, the soil borings were permanently abandoned in a manner consistent with Part 2 of IDEM's *Drilling Procedures and Monitoring Well Construction Guidelines – Non-rule Policy Document W-0053*. This method includes gravity pouring bentonite into the annulus of the soil boring and lightly hydrating the bentonite. Holes in the asphalt were appropriately patched with asphalt material.

ERM retained Ashton Land Surveyors (Ashton) to survey horizontal and vertical control of the soil borings in the State Planar coordinate system. Ashton's survey data is provided in Appendix C.

### 2.3 MONITORING WELL INSTALLATION

To evaluate groundwater flow across the Site, ERM converted 8 soil borings into 8 permanent two-inch monitoring wells (MW-1 through MW-8) at locations across the Site. The monitoring well locations are depicted on Figure 2. Monitoring wells were installed in accordance with IDEM's *Drilling Procedures and Monitoring Well Construction Guidelines* (IDEM, 2009B).

The monitoring wells were constructed of two-inch diameter schedule 40 PVC materials and equipped with a five-foot long, #10 slot screen using a 20/40 grade “prepack” sand filter pack and a 20-40 grade sand filter pack emplaced to approximately two feet above each screen. Bentonite chips and/or slurry were then added as necessary. Flush-mounted well covers were used to protect the permanent wells installed in asphalt and prograde well covers were used for the locations in the woods. Monitoring well construction diagrams are provided in Appendix A.

A surge block and a submersible pump were utilized to develop the well and remove a minimum of five well volumes from each well (with the exception of MW-1 and MW-5, which went dry). Purge water was containerized in a properly labeled 55-gallon drum and staged onsite.

ERM retained Ashton Land Surveyors (Ashton) to survey horizontal and vertical control of the monitoring wells in the State Planar coordinate system. Using the survey data, and the monitoring well construction information, ERM prepared a summary table of the well construction information. This summary table is provided as Table 1. Ashton’s survey data is provided in Appendix C.

## 2.4 GROUNDWATER SAMPLING

ERM completed the groundwater sampling from June 20 to 21, 2016. Groundwater samples were collected for the IDEM-approved analytical parameters and at the locations identified (Appendix B) using a low-flow QED® bladder pump. Groundwater quality was monitored during monitoring well sampling using a YSI® 556 multiparameter meter for dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, conductivity, and turbidity. Groundwater quality parameters were summarized on purge forms in the field and are provided in Appendix D. Once stabilization was achieved as per IDEM’s *Micro-Purge Sampling Option* guidance, groundwater was pumped directly into laboratory supplied containers. Groundwater samples were submitted in a cooler on ice under strict chain of custody procedures. ERM collected 1 duplicate sample, 1 equipment blank, and 1 MS/MSD sample for QA/QC analysis in accordance with the IDEM-approved QAPP.

ERM was not able to collect a sample for the full targeted analytical suite from monitoring well MW-1 due to low volume in the monitoring well. ERM only collected a groundwater sample for analysis of d/f from monitoring well MW-1. In addition, ERM was unable to collect a groundwater sample from monitoring well MW-4 due to no groundwater recovery in the well.

In addition, the d/f sample from monitoring well MW-7 was damaged in transit, and as a result, ERM remobilized to the Site on July 7, 2016 to recollect the groundwater sample. ERM attempted to collect additional volume for analysis

at monitoring well MW-1 to meet the analytical suite included in the Work Plan; however, sufficient volume was not recovered.

## **2.5 WIPE SAMPLING**

ERM attempted to enter the incinerator building during the week June 13, 2016. Upon initial inspection of the area, significant dust, standing water, and moisture were observed. In addition, ERM's field staff noted significant debris on the floor as well as potential asbestos containing materials (ACM). IDEM staff were on-Site during this initial inspection as well. The staff in the field did not have the appropriate personal protective equipment (PPE) to enter the building during the initial mobilization and needed to further evaluate the potential risks with collecting the wipe samples.

ERM updated the health and safety plan (HASP) and mobilized staff with appropriate PPE to enter the building and collect the wipe samples. During the remobilization to the Site to collect the groundwater sample from monitoring MW-7 on July 7, 2016, ERM also collected the 3 wipe samples from the 3 incinerators identified in the building. ERM collected one wipe sample for each of three incinerators and submitted them for PCB analysis in accordance with 40 CFR 761.123 using US EPA Test Method 8082.

## **2.6 SOIL AND GROUNDWATER ANALYTICAL SUITE**

Soil and groundwater samples were submitted to the project laboratory in accordance with the sample matrix in Appendix B, with minor deviations due to lack of groundwater volume in the monitoring wells.

In accordance with the IDEM-approved Work Plan, ERM utilized the following analytical methods for analysis, where appropriate for the investigation location.

- PAHs – US EPA Test Method 8270
- Arsenic, thallium, lead and chromium – US EPA Test Method 6010
- Gross Alpha/Beta – US EPA Test Method 900.0
- Radium 226 – US EPA Test Method 903.1
- Gamma Spec – US EPA Test Method 901.1
- Dioxins/furans (all 17 compounds) – US EPA Test Method 8290
- Polychlorinated Biphenyls (PCBs) – US EPA Test Method 8082A

### 3.0 SUMMARY OF FINDINGS & ANALYTICAL DATA

#### 3.1 GEOLOGIC AND HYDROGEOLOGIC EVALUATION

Based on the potentiometric map prepared by CardnoATC in the Phase II ESA, further evaluation of the Site hydrogeology was necessary to understand groundwater flow. Prior to collecting groundwater samples from the monitoring well network, ERM gauged the monitoring wells and determined the depth to water and documented those observations in the project field book. The monitoring well locations are depicted on Figure 2.

The groundwater elevation noted at MW-1 (958.93 ft amsl) is significantly higher than the groundwater elevation observed in the remaining monitoring wells east and south of the on-Site buildings. An important factor to the dynamic hydrogeology on-Site is the topographic elevation changes that occur from north to south, including an approximate 37 ft. elevation decrease from MW-1 to MW-3 and then an approximate 45 ft. elevation decrease from MW-1 to MW-2.

Monitoring wells installed during the Site investigation work were installed at the depth of first occurrence of groundwater. Based on the geologic interpretations presented on the boring logs, the hydrogeologic unit at MW-1 was an approximately 2 ft thick sand seam confined above and below by a clay with trace gravel. During the installation of both monitoring well MW-1 and MW-4, the observed hydrogeologic units were not completely saturated and immediate drawdown was observed during well development and sampling, indicating that the saturated units are very low-yield units and likely discontinuous.

The subsurface soil consisted of fill material ranging from 4 ft (SB-16/MW-1) to 15.5 ft (SB-32) in thickness. This fill was composed of a sandy clay matrix containing fragments of gravel, brick, glass, concrete and other aggregate material. It is possible that the fill was mixed with on-Site soil material over successive expansions to the hospital campus, making a clear distinction between fill and native soil difficult to define. In most of the soil borings advanced by ERM, this fill material was underlain by saturated sandy gravel, ranging from 2 to 9 feet in thickness depending on the location. In several boring locations, the saturated gravel was overlain by sandy silt, which was observed to be moist but not saturated. Borings located at higher elevation, north side of the Site (i.e. SB-16/MW-1 and SB-20/MW-4), did not encounter the saturated gravel. Fine-grained sand and silty sand was found at these locations, which produced small amounts of water, but there is no indication that these units are laterally continuous. All borings that were advanced just beyond water-bearing granular soils encountered cohesive silty clay, in which only a trace amount of moisture was observed.

A potentiometric map was constructed based on water well depth measurements collected on June 20 and is included as Figure 3. A table summarizing the depth to water measurements is provided as Table 2. As shown on the figure, groundwater flow is controlled largely by topography and flows generally from northwest to southeast. Note that groundwater elevation at MW-1 is not used for contour generation, due to the belief that the water encountered at this location is likely in a non-continuous saturated unit.

### **3.2 FIELD SCREENING RADIOLOGICAL PRESENCE**

Field screening was completed by CNA during the advancement of the soil boring work. CNA provided a summary report of their findings in their report provided in Appendix E.

The field screening data indicates that the radiological activity present off-Site, outside the range of Reid's historical operations, is within a similar range as the radiological activity detected on-Site and in on-Site soils.

### **3.3 WIPE SAMPLING ANALYTICAL DATA**

The 3 wipe samples collected from the 3 incinerators were submitted to Pace Analytical in Indianapolis, Indiana for analysis of PCBs. The laboratory report is provided in Appendix F and a summary of the analytical data is provided on Table 3.

PCBs were not detected above the laboratory reporting limit (1 microgram) in the 3 wipe samples collected from the 3 incinerators.

### **3.4 SOIL ANALYTICAL DATA**

Soil analytical data from the 2016 Site investigation activities is summarized on Table 4. Rinsate blank and equipment blank analytical data is summarized on Table 5. Laboratory analytical reports are provided in Appendix F.

#### **Dioxin/Furan**

The IDEM screening levels utilized to evaluate the d/f data are relative to the concentration of 2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). When individual d/f congeners exceed the 2,3,7,8-TCDD screening level, calculations of the toxicity equivalence (TEQ) can be evaluated, if necessary. The lowest screening level applicable for the IDEM residential direct contact screening level (RDCSL) is 67 picograms per gram (pg/g).

As noted in ERM's TEQ calculations, which were included in the IWP, dioxins in soil samples collected by CardnoATC in 2014 were below the IDEM screening

levels for 2,3,7,8-TCDD if the non-detects were evaluated at the method detection limit (MDL), ½ the MDL, and zero. Based on discussions with the IBP, ERM and the IBP agreed that no further delineation of dioxins detected during the Phase II ESA was necessary. A copy of the TEQ calculations using the 2014 data supporting d/f as not being a Site COC is provided in Appendix G.

However, based on a request from the IBP via email on May 9 and June 10, 2016, ERM collected soil samples for d/f from soil borings SB-28 (close proximity to SB-5) and SB-35 (near incinerators), both locations had the potential for the presence of d/f based on historical data and Site use. As summarized on Table 4, d/f were detected in the soil samples collected from both soil borings SB-28 and SB-35; however, none of the individual d/f congeners exceeded the IDEM RDCSL for 2,3,7,8-TCDD, which is protective of residential land use and is also protective of migration to groundwater and commercial/industrial direct contact (CIDCSL).

Of note, ERM requested that the project laboratory report the d/f soil analytical data to the estimated detection limit (EDL), which is lower than the laboratory's reporting limit (RL) for the individual congeners. Analyzing the d/f data to the EDL was conducted in the event the TEQ calculations were necessary based on the analytical results. Since the individual d/f detections did not exceed the IDEM screening levels, calculating the TEQs is not necessary since the data does not support d/f being a Site COC.

## **Metals**

ERM collected select soil samples for analysis of arsenic, lead, chromium, and thallium.

Chromium was detected in the soil samples collected from soil borings SB-16 and SB-17, but at concentrations well below the IDEM residential soil screening levels for chromium (III). However, when compared to the IDEM screening level for chromium (VI), the total chromium concentrations exceed IDEM's RDCSL. Reid did not handle chromium (VI) at the Site; therefore, a comparison to the chromium (III) screening levels is appropriate. It should be noted that the 2014 and 2016 chromium data are within similar ranges.

Thallium was not detected in soil samples collected during the investigation work. However, it should be noted that the laboratory reporting limits are above IDEM's RDCSL, but below the MTGSL and CIDCSL.

Lead was detected in one soil sample, SB-22 (0-2 ft bgs duplicate) at concentrations above IDEM's CIDCSL at 890 mg/kg; however, the parent sample, SB-22 (0-2 ft bgs) contained lead concentrations at 140 mg/kg, which is



well below IDEM's RDCSL and MTGSL. No other soil samples contained lead at concentrations above IDEM's MTGSL or RDCSL.

Arsenic concentrations ranged from 3.3 (SB-18) to 16 mg/kg (SB-16). Concentrations of arsenic were above IDEM's RDCSL in six soil samples and above IDMEM's MTGSL in 11 soil samples, but these concentrations do not exceed IDEM's CIDCSL or excavation worker screening levels (EWDCSLs). It should be noted that these arsenic concentrations are within a range generally acceptable as background ranges. Samples collected during the completion of the Phase II ESA detected a range of arsenic concentrations from 2.8 mg/kg (SB-13 6-8 ft bgs) to 22.9 mg/kg (SB-5 0-2 ft bgs duplicate), which demonstrates a consistent range of arsenic concentrations between the two phases of investigation conducted in 2014 and 2016.

### **PCBs**

ERM advanced two soil borings (SB-22 and SB-28) to delineate and confirm the presence of PCBs in soil at concentrations identified by CardnoATC at SB-5 (0-2 ft bgs duplicate), which had a concentration of Aroclor 1232 at 3.18 mg/kg. This detection was above IDEM's RDCSL but below the CIDCSL.

Concentrations of Aroclor 1254 and 1260 were detected in soil at SB-22 (0-2 ft bgs) and SB-28 (0-2 ft bgs) but at concentrations well below the IDEM RDCSLs. No other Aroclors were detected above their respective laboratory reporting limits (RLs). As such, PCBs do not appear to be a COC at the Site.

### **Radionuclides**

ERM collected samples for gross alpha, gross beta, radium-226, gamma spec, and lithium. As described in the IWP, the isotopes identified in the first radiological material license (RML) for Reid included the isotopes cobalt-57, cesium-137, iodine-125, and barium-133. The sole gamma emitter associated with Reid's second NRC license (No. 13-03284-03) was cobalt-60.

Cobalt-60 was reported to the minimum detectable concentration (MDC), where applicable, which is similar to an MDL since it screens lower concentrations than the laboratory's standard RL. Cobalt-60 was detected in two soil samples (SB-10 [8-12 ft bgs] and SB-28 [0-2 ft bgs]), but at concentrations below the laboratory reporting limit. Cobalt-60 was not detected above the MDC in any of the remaining soil samples collected at the Site. Of note, these low-level radioactivity levels of Cobalt-60 will decay into the stable isotope of nickel, therefore, no radioactive isotopes are created upon the decay of cobalt-60. Further, none of the isotopes associated with Reid's first RML were detected in soil samples at concentrations above the RL.

The radium-226 and radium-228 screening levels utilized for ERM's Site investigation work reference the US EPA Preliminary Remediation Goals (PRGs) based on calculations protective of the maximum contaminant level (MCL) for MTG. These US EPA values are being used since IDEM does not have published screening levels for radionuclides. The US EPA PRGs were also used to obtain a corresponding value for the CIDCSL and a RDCSL value for comparison. It should be noted that radium is a naturally occurring compound in the United States.

Radium-226 was detected in each soil sample collected for laboratory analysis at concentrations above the assumed US EPA CIDCSLs. Radium-226 ranged from 0.27 to 1.35 pCi/g with an average of 0.84 pCi/g.

Radium-228 was detected in 18 of the 25 soil samples collected for laboratory analysis at concentrations above the assumed US EPA CIDCSLs. Radium-228 ranged from 0.21 to 1.14 pCi/g with an average of 0.637 pCi/g.

Of note, in the United States Geological Survey Document titled *Naturally Occurring Radioactive Materials (NORM) in Produced Water and Oil-Field Equipment – An Issue for the Energy Industry*, there is citation stating that “most natural soils and rocks contain approximately 0.5 – 5 pCi/g of total radium”. In addition, in a document published in November 1981 by the Oak Ridge National Laboratory (ORNL) and titled *State Background Radiation Levels: Results of Measurements Taken During 1975-1979*, the ORNL research indicates that in Indiana background radium-226 alone can range from 1 to 1.1 picocuries per gram (pCi/g). US EPA often uses a screening level of 5 pCi/g for the combination of radium-226 and radium-228.

For the purposes of the data comparison in Table 4, ERM utilized the US EPA maximum contaminant level (MCL) based screening levels (residential exposure) for this assessment. However, it should be noted that the combined radium-226 and radium-228 concentrations in each sample were well below 5 pCi/g. The highest combined radium-226 and radium-228 concentration was 2.49 pCi/g at soil boring SB-22 (0-2 ft bgs).

Gross alpha was detected in each soil sample collected for laboratory analysis. The gross alpha concentration range was 7.89 to 24.5 pCi/g with an average concentration of 15.6 pCi/g. There is no available soil screening level for gross alpha either in the State of Indiana or from US EPA.

Gross beta was detected in each soil sample collected for laboratory analysis. The gross beta concentration range was 7.21 to 22.3 pCi/g with an average concentration of 15.82 pCi/g. Neither IDEM nor USEPA has published screening levels for gross beta.

Lithium was detected in each soil sample collected for laboratory analysis, but it was not detected above the IDEM RDCSL in any samples collected during the 2016 Site investigation.

For the radiological compounds, it should be re-emphasized that the field screening activities conducted during the soil boring activities indicated that the radiological activity levels detected in on-Site soil were consistent with off-Site background observations. Furthermore, none of the radiological compounds detected at the Site exceeds any of the available screening levels or other potential criteria. Therefore, radiological compounds should not be considered COCs at this Site.

### PAHs

The primary goal of the PAH soil sampling was to delineate impacts above the CIDCSL identified at soil boring SB-13 within the suspected dumping area and confirm the presence of PAHs near the entrance to the Site. ERM collected 12 soil samples from 5 soil borings (SB-16 through SB-19 and SB-22) for PAH analysis.

Benzo(a)pyrene was detected above the IDEM CIDCSLs in the soil sample collected at SB-16 (0-2 ft bgs). Concentrations of benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected above the IDEM RDCSLs in the soil sample collected at SB-16 (0-2 ft bgs). Only benzo(a)pyrene was detected in the deeper soil sample collected from SB-16 (6-8 ft bgs) at concentrations slightly above the IDEM RDCSL. This data indicates the vertical delineation was completed at this location.

Benzo(a)pyrene was detected slightly above IDEM's RDCSL at SB-17 (0-2 ft bgs). The PAH concentrations present in the deeper soil sample at SB-17 (6-8 ft bgs) were below their respective IDEM RDCSLs, indicating the vertical delineation to the CIDCSL was completed at this location.

Concentrations of benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected in SB-19 (0-2 ft bgs) at concentrations above IDEM CIDCSLs. Naphthalene was detected just slightly above IDEM's MTGSL. PAHs were detected in the deeper sample collected at SB-18 (6-8 ft bgs), but at concentrations below what was detected in the 0-2 ft bgs sample, indicating the vertical extent has been delineated. The PAH concentrations detected at SB-18 (6-8 ft bgs) were all below IDEM screening levels.

Concentrations of benzo(a)pyrene were detected above the IDEM CIDCSLs, and benzo(b)fluoranthene was detected above IDEM's MTGSL in the soil sample collected at SB-16 (0-2 ft bgs). Dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene were detected above the IDEM RDCSLs in the soil sample collected at

SB-16 (0-2 ft bgs). Only benzo(a)pyrene was detected in the deeper soil sample collected from SB-16 (6-8 ft bgs) at concentrations at the IDEM RDCSL. These results indicate that the vertical extent has been delineated at this location.

Soil boring SB-22 was advanced to evaluate the benzo(a)pyrene detection slightly above the RDCSLs at SB-8. PAHs were not detected above the IDEM RDCSLs in the two samples (SB-22 [0-2 and 16-20 ft bgs]) collected. ERM thus confirmed that PAHs are not above IDEM RDCSLs near the access entrance to the Site.

ERM was successful in delineating the horizontal extent of the previously detected PAHs in SB-13 at 6-8 ft bgs; however, ERM's data indicates that PAHs are present in surface soils (0-2 ft bgs) in the former dumping area at concentrations above IDEM's CIDCSLs.

### VOCs

While it was not part of the IWP, ERM screened soil samples in the field for TPV using a PID. During the installation of soil boring SB-30, the PID measurement indicated potential volatile impacts at a depth of 1-3 ft bgs. To evaluate the potential for VOCs in this location, ERM collected one soil sample and submitted it to the project laboratory for VOC analysis using US EPA test method 8260B.

No VOCs were detected in the soil sample at concentrations above the laboratory reporting limits during either the 2014 Phase II ESA completed by CardnoATC or during ERM's 2016 Site investigation activities. The data set confirms that VOCs are not considered a Site COC in soil.

## **3.5 GROUNDWATER ANALYTICAL DATA**

Groundwater analytical data from the 2016 Site investigation activities is summarized on Table 6. Rinsate and equipment blank analytical data is summarized on Table 5. Laboratory reports are provided in Appendix F.

### Dioxins/Furans

Using the data collected by CardnoATC in 2014, ERM completed TEQ calculations for the d/f concentrations and presented those calculations within the IWP. A copy of the d/f TEQ groundwater calculations is provided in Appendix G. Based on the calculations, d/f was a potential COC in groundwater since the TEQ calculations indicated an exceedance of the 2,3,7,8-TCDD concentration using ½ the laboratory RL. However, it should be noted that the RLs in groundwater were slightly elevated, causing congeners with high toxicity equivalence factors (e.g. 1) to contribute to the overall exceedance at ½ the RL. Due to d/f detection and the uncertainty in the TEQ calculations, d/f remained a potential COC for the IWP implementation.

D/f congeners were detected in each groundwater sample collected by ERM from the monitoring well network (MW-1 through MW-3 and MW-5 through MW-8) in 2016. The concentrations were reported to the EDL by the laboratory. The EDL is similar to the MDL for other compounds such as VOCs.

None of the individual congeners detected exceeded IDEM's residential tap water screening level (RTWSL) (30 picograms per liter) for 2,3,7,8-TCDD (IDEM's most conservative screening level for d/f) in any of the groundwater samples collected from the monitoring wells. It should be noted that the groundwater samples collected from the monitoring wells were low-flow sampled, and ERM was able to obtain generally low turbidity measurements. As noted in the IWP, d/f concentrations can increase due to high turbidity. As a result of the 2016 groundwater data, d/f does not appear to be a COC in groundwater, and the TEQ calculations are not necessary since d/f does not pose an exposure concern at the Site based on the groundwater samples collected in 2016.

### **Metals**

Groundwater samples were submitted to the project laboratory for analysis of arsenic, chromium, and thallium.

Chromium and thallium were not detected at concentrations above IDEM's RTWSL. These compounds are not considered a COC at the Site.

Arsenic was detected slightly above IDEM's RTWSL in samples collected from MW-2, MW-5, MW-6, and MW-8, considering the range of arsenic in groundwater is 11 to 19 ug/L. During the Phase II ESA, the groundwater concentrations ranged from 11 to 18 ug/L, which is very consistent across the Site and between the two phases of investigation. It is likely these low concentrations are consistent with background groundwater concentrations.

### **PCBs**

ERM collected 1 groundwater sample from monitoring well MW-5 for laboratory analysis of PCBs. No Aroclors were detected in the sample above the laboratory RLs, which are well below IDEM's RTWSLs. Consistent with the soil and wipe sample analytical data, PCBs do not appear to be a COC at the Site.

### **Radionuclides**

For the purposes of evaluating radionuclide concentrations in groundwater, ERM utilized IDEM's RTWSL (40 ug/L) to evaluate lithium concentrations. One groundwater sample collected from MW-5 contained detectable concentrations

of lithium above IDEM's RTWSL. The remaining monitoring well samples were below IDEM's RTWSL.

To evaluate concentrations of gross beta, ERM utilized a conservative value (50 pCi/L) published by the California State Water Resources Control Board (CA SWRCB). The CA SWRCB utilizes this screening level to trigger potential additional sampling and does not necessarily trigger a human health concern. ERM is proposing the use of this SL since IDEM does not have a corresponding SL. Gross beta was detected in monitoring wells MW-2 and MW-5 but at concentrations well below the proposed CWRCB SL.

ERM proposes using the US EPA screening level (15 pCi/L) for gross alpha since IDEM does not have a corresponding SL. Gross alpha was detected in only one groundwater sample (MW-6 duplicate) at a concentration below the US EPA SL.

ERM is proposing the use of 1.2 pCi/L as the screening level for Cesium-137 based on the US EPA recommended SL. Cesium-137 was not detected in groundwater samples collected from the permanent monitoring wells, although it should be noted that the laboratory RLs are slightly above the proposed screening level. The laboratory could not obtain concentrations at or below the 1.2 pCi/L.

Of note, Cobalt-60 was not detected above the MDC in any groundwater samples collected at the Site.

Based on this data set, radionuclides are not a COC for the Site.

### **PAHs**

The only constituent detected in groundwater samples above IDEM's RTWSL during CardnoATC's Phase II ESA in 2014 was dibenzo(a,h)anthracene. The remaining PAHs were below their respective laboratory RLs.

PAHs were not detected above the laboratory reporting limits in groundwater samples collected from monitoring wells MW-6 and MW-7. Monitoring wells MW-2, MW-3, MW-5, and MW-8 had individual PAH concentrations detected above the laboratory MDLs, but none of the detections were above IDEM's RTWSLs. As such, PAH in groundwater should not be considered a COC at the Site.

## **3.6 SUMMARY OF THE FILL DELINATION**

The discussion of the suspected fill area originated in the Phase I ESA prepared by CardnoATC in 2014. The Phase I ESA discussed an aerial photograph that was taken prior to the 1970s showing possible fill activities to allow the



construction of site buildings (Tower and East and West Wing Buildings) and parking lots on the southern third of the property. CardnoATC proceeds to discuss possible filling activities in a 1960s aerial photograph.

Based on the results of the drilling activities at the Site, the observations indicate that multiple fill events have likely occurred at the Site. A primarily clay fill material with traces of brick and glass debris was observed on the western Site boundary near the Site access road, in and near the southern wooded area, and in the former dumping area. A primarily sand fill material was also observed at areas near the northwest corner and center sections of the Site. The sand fill material also contains some evidence of bricks and other debris.

The clay fill material in the former dumping area is approximately 7.5 to 8 ft thick and consists of traces of debris as well. The test pits advanced in this area by CardnoATC indicated a 6 ft depth to the bottom of the fill. Near the southern wooded area, closer to the Middle Fork of the White River, the apparent fill structure is primarily clay and appears to range in thickness from 3 to 6 ft, although it is not clear whether the material is fill material. The test pits advanced by CardnoATC do not indicate that fill was present in test pit TP-3 or TP-5. Based on the field screening conducted, it does not appear that the previously suspected fill area identified by CardnoATC is impacted above background or with organic volatiles based on the field screening.

ERM's field geologist noted borings without fill material. These borings included SB-31 and SB-34. Based on these locations, SB-31 likely marks part of the southern boundary of the fill and SB-34 would be east of the identified fill structure. As such, the suspected fill boundary, if present, as described in the Phase II ESA, can be considered to be a reasonable delineation of the extent of the fill; however, as discussed in Section 3.5, the suspected fill areas do not appear to be impacted.

## 4.0 INVESTIGATION SUMMARY

Based on the findings from the Site investigation completed by ERM, coupled with the findings from the Phase II ESA completed in 2014, ERM has prepared the following summary of the findings.

### Dioxins/Furans

- ERM completed TEQ calculations using the 2014 d/f data from the Phase II ESA. ERM recommended that d/f should not be considered a COC in soil. However, the groundwater data indicated that further evaluation was appropriate to rule out d/f as a COC due to potential issues relative to turbidity and elevated RLs in the Phase II ESA.
- Per IDEM's request, ERM collected soil samples for d/f at select locations at the Site. The d/f analytical data did not exceed IDEM's RDCSL for 2,3,7,8-TCDD, which is a conservative reference SL for d/f.
- ERM collected low-flow groundwater samples for d/f analysis to minimize the turbidity of the samples. The d/f data indicated concentrations well below IDEM's RTWSL for 2,3,7,8-TCDD, which is the conservative reference SL for d/f.
- Since the individual d/f congeners didn't exceed IDEM's RDCSL or the RTWSL in the 2016 Site investigation data, the TEQ calculations for both soil and groundwater were not necessary.
- Based on the findings, d/f should not be a COC at the Site.

### PCBs

- PCBs were not detected in the wipe samples collected from the incinerators. As such, the incinerators do not appear to be a source for PCBs.
- It is unknown why elevated PCB detections were reported in the duplicate sample collected by CardnoATC from SB-5 (0-2 ft bgs); based on the Phase II ESA, coupled with the Site investigation summary herein, the detection appears to be anomalous.
- PCBs were not detected above the IDEM RTWSL in groundwater samples collected at the Site.
- Concentrations of Aroclor 1254 and 1260 were detected in soil at SB-22 (0-2 ft bgs) and SB-28 (0-2 ft bgs) but at concentrations well below the IDEM

RDCSLs. No other Aroclors were detected above their respective laboratory reporting limits (RLs).

- Based on the results of the investigations completed in 2014 and 2016, it appears that PCBs should not be considered a COC in either soil or groundwater at the Site.

### Metals

- Chromium and thallium were not detected in groundwater samples collected during the 2016 Site investigation work. Arsenic was detected in groundwater samples in 2016 within a similar concentration range to the 2014 Phase II ESA. However, this range is within a reasonable background range.
- Lead was detected in one duplicate soil sample above IDEM's CIDCSL, but the parent sample contained lead concentrations below the RDCSL.
- Chromium, arsenic, and thallium should not be considered a COC requiring further delineation based on the findings from the 2016 Site investigation activities.
- Arsenic concentrations are consistent with background concentrations.

### Radionuclides

- Based on the Phase II ESA, no contamination from any radionuclide covered by the radiological material licenses (RML) was identified within those survey areas where radiological sources were located.
- Based on the Phase II ESA radiological analytical data, the isotopes identified in groundwater samples are all decay products of naturally occurring radiological materials common in soil. There are three radiological natural decay series led by uranium-238, thorium-232, and uranium-235 that decay into the isotopes identified in the Phase II ESA groundwater samples.
- Additionally, only alpha-emitting radiation was detected in samples collected in the Phase II ESA while the equipment and supplies licensed by Reid only emitted gamma radiation. As such, there does not appear to be a correlation between these isotopes and those used via Reid's RMLs.
- Lithium was not detected in any soil samples collected during the 2016 Site investigation. However, lithium was detected in one groundwater sample (MW-5) slightly above IDEM's RTWSL.

- Gross beta was detected in monitoring wells MW-2 and MW-5 but at concentrations well below the proposed CWRCB SL. Gross alpha was detected in only one groundwater sample (MW-6 duplicate) at concentration above the laboratory RL, but below the US EPA SL. Cesium-137 was not detected in groundwater samples collected from the permanent monitoring wells.
- Based on the USGS and ORNL publications, the radium-226 and radium-228 concentrations in soil are within a reasonable range for background soils in Indiana. Further, the radium-226 and radium-228 combined concentrations in each samples were well below the US EPA recommended screening level of 5 pCi/g.
- The gross alpha concentration range in soil was 7.89 to 24.5 pCi/g with an average concentration of 15.6 pCi/g, concentrations which are above the 0.02 pCi/g SL, which is the sole RL and is based on a residential exposure. The gross beta concentration range in soil was 7.21 to 22.3 pCi/g with an average concentration of 15.82 pCi/g. However, these concentrations could be background, natural decay concentrations.
- Cobalt-60, associated with the second RML held by Reid, was not detected at concentrations above the laboratory RL in soil samples collected at the Site; however, Cobalt-60 was detected above the MDC in two groundwater samples. Cobalt-60 was not detected above the RL or the MDC in groundwater. The presence of cobalt-60 is of very low radioactivity and should not require further investigation.
- Based on the radionuclide groundwater concentrations detected during the 2016 Site investigation work, radionuclides should not be considered a Site COC for groundwater; radium in soil appears to be within background ranges in the State of Indiana and does not appear to be related to any past use of radiological materials by Reid.
- It should be emphasized that the field screening activities conducted by CNA and ERM during the Site investigation activities indicated that the radiological activity detected in on-Site soil samples were consistent with the radiological activity detected during similar screening activities off-Site. This field screening included gamma emitters, such as Cobalt-60.

### **Volatile Organic Compounds (VOCs)**

- Samples collected during the Phase II ESA and the 2016 Site investigation activities did not detect VOCs above laboratory RLs.
- VOCs are not a COC at the Site in both soil and groundwater

### **Polycyclic Aromatic Hydrocarbons (PAHs)**

- ERM was successful in delineating the horizontal extent of the previously detected PAHs in SB-13 at 6-8 ft bgs; ERM's data indicates that PAHs are limited to surface soils (0-2 ft bgs) in the former dumping area at concentrations above IDEM's CIDCSLs.
- PAHs were not detected above IDEM's RTWSL in groundwater samples collected during the 2016 Site investigation activities. As such, PAH in groundwater should not be considered a COC at the Site.

### **Suspected On-Site Fill**

- Radionuclide and d/f analytical data from the 2016 Site investigation activities do not indicate a need for further evaluation relative to the on-Site suspected fill identified in the Phase II ESA.

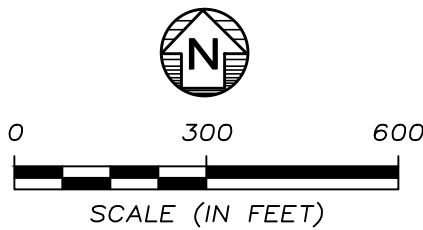
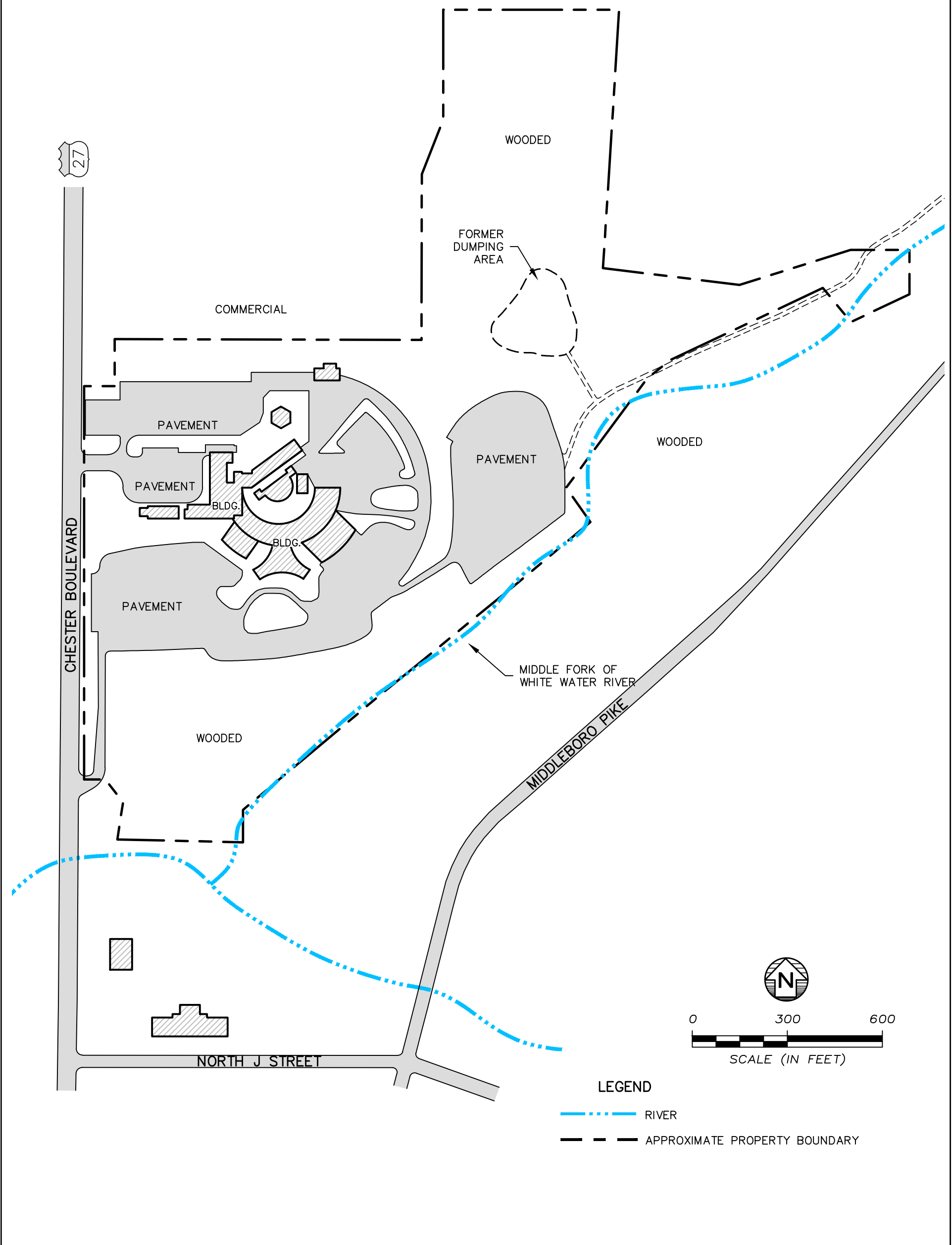
### **Site Hydrogeology**

- With the exception of lithium and arsenic, no other constituents were detected in groundwater above their respective IDEM RTWSL.
- Groundwater flow is generally to the south/southwest, which is consistent with the findings presented in the Phase II ESA.
- A minimum of 2 saturated units are likely present at the Site. One unit was identified at MW-1 in the northwestern corner of the Site. The second unit is present south of the on-Site buildings. Based on the work completed during the 2016 Site investigation work, there is no evidence that these units are hydraulically connected.

## *Figures*




# SITE LAYOUT MAP

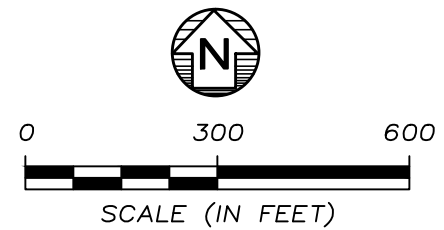
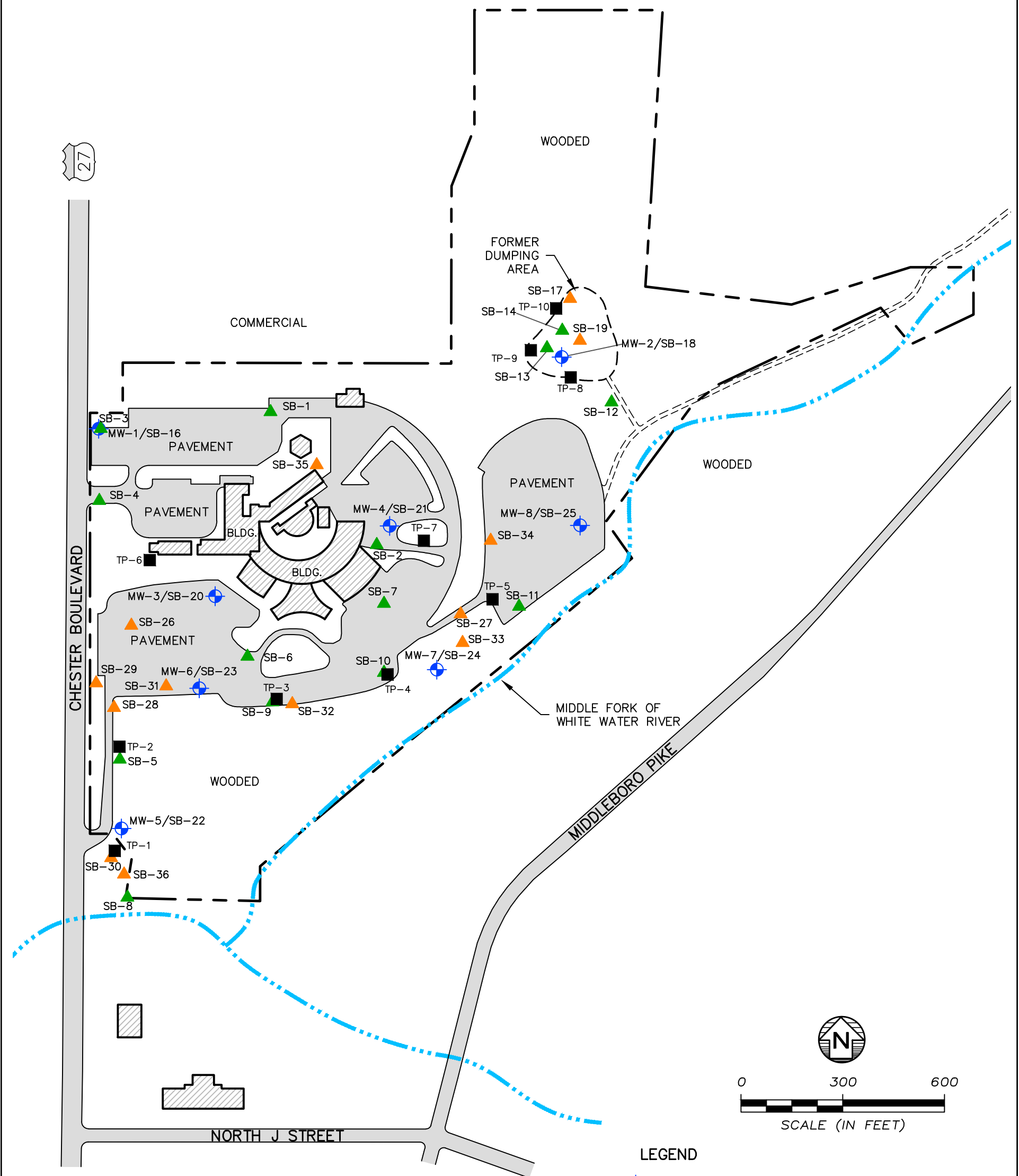


- LEGEND**
- - - - - RIVER
  - - - - - APPROXIMATE PROPERTY BOUNDARY







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CADD Review RMK		<b>FORMER REID HOSPITAL</b> 1401 EAST CHESTER BOULEVARD RICHMOND, INDIANA	CHK'D BY: CB
DRAWN BY: GML			0356198
Date Drawn/Rev'd 8/8/16		<b>Environmental Resources Management</b>	FIGURE 1


# SITE INVESTIGATION LOCATIONS (2014–2016)



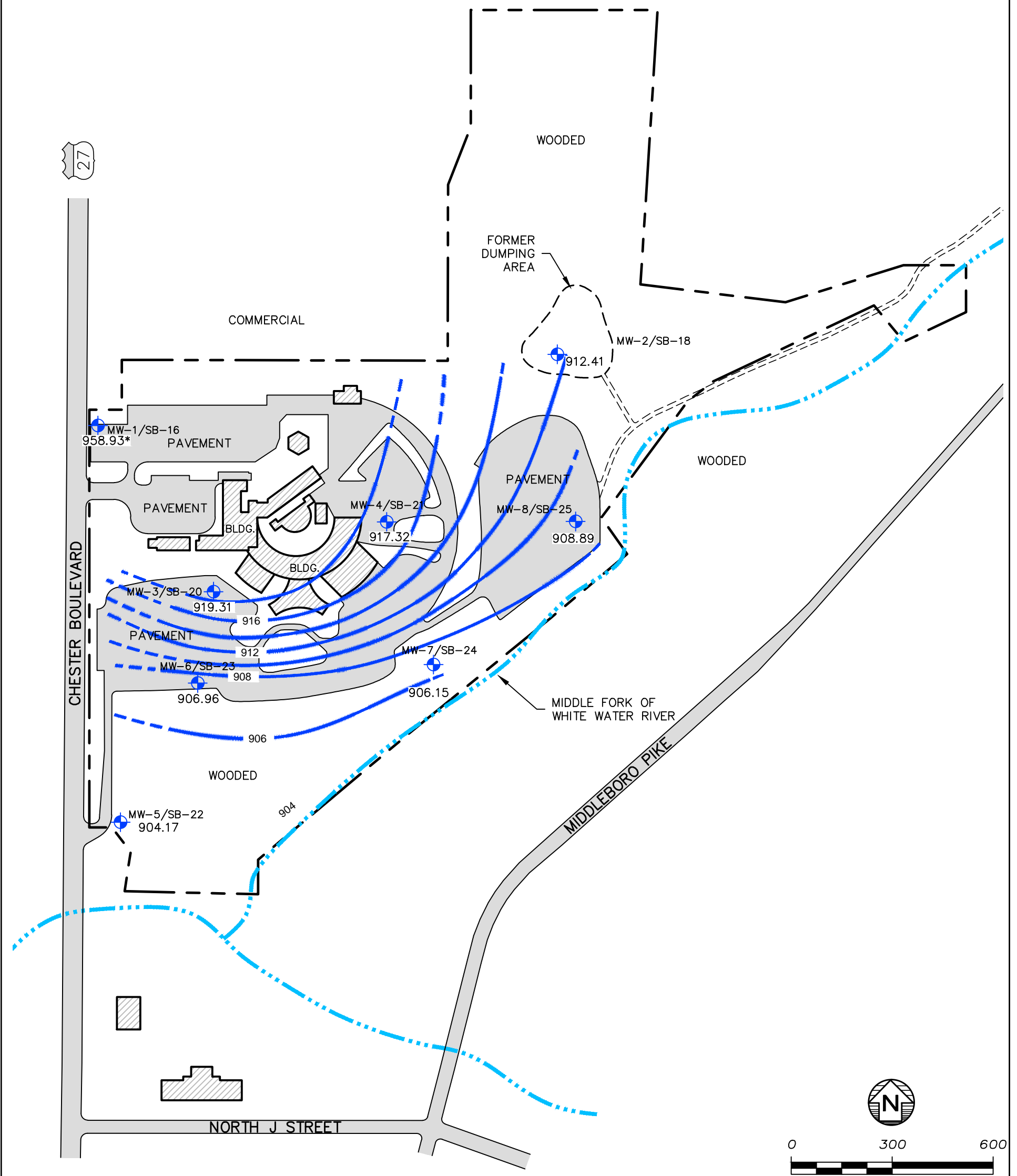
## LEGEND

-  MONITORING WELL LOCATION (ERM – JUNE 2016)
-  SOIL BORING LOCATION (ERM – JUNE 2016)
-  SOIL BORING LOCATION (CARDNO – JULY 2014)
-  TEST PIT LOCATION (CARDNO – JULY 2014)
-  RIVER
-  APPROXIMATE PROPERTY BOUNDARY



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CADD Review RMK		<b>FORMER REID HOSPITAL</b> 1401 EAST CHESTER BOULEVARD RICHMOND, INDIANA	CHK'D BY: CB
DRAWN BY: GML			0356198
Date Drawn/Rev'd 8/8/16		<b>Environmental Resources Management</b>	FIGURE 2

# GROUNDWATER CONTOUR MAP – JUNE 2016



### LEGEND

-  MONITORING WELL LOCATION
-  GROUNDWATER CONTOUR LINE (DASHED WHERE INFERRED)
- \*NOT USED IN CONTOUR GENERATION

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Date Drawn/Rev'd 8/8/16



## FORMER REID HOSPITAL

1401 EAST CHESTER BOULEVARD  
RICHMOND, INDIANA

Environmental Resources Management

CHK'D BY: CB
0356198
FIGURE 3

## *Tables*

**Table 1: Soil Boring & Monitoring Well Summary**

Former Reid Hospital Site  
1401 Chester Boulevard, Richmond, Indiana

<b>Boring/Monitoring Well ID</b>	<b>Northing</b>	<b>Easting</b>	<b>Elevation Ground</b>	<b>Top of Casing Elevation</b>	<b>Total Depth</b>	<b>Screened Interval</b>
	-	-	ft amsl	ft amsl	ft bgs	ft bgs
SB-16/MW-1	1675665.797	546511.492	966.765	966.417	10*	5-10
SB-17	1676049.791	547901.662	920.634	-	20	-
SB-18/MW-2	1675877.61	547876.793	919.951	922.828	20	5-15
SB-19	1675926.331	547930.535	920.327	-	16	-
SB-20/MW-3	1675171.956	546854.8	929.023	928.185	26	16-26
SB-21/MW-4	1675379.26	547369.679	940.056	939.56	25	15-25
SB-22/MW-5	1674486.807	546578.496	920.956	920.978	25	15-25
SB-23/MW-6	1674900.239	546808.012	923.762	923.442	26	16-26
SB-24/MW-7	1674955.285	547508.533	913.202	917.008	19	7-12
SB-25/MW-8	1675380.504	547931.011	915.29	914.975	15	5-15
SB-26	1675085.655	546607.706	927.787	-	20	-
SB-27	1675119.096	547578.931	920.287	-	24	-
SB-28	1674843.459	546556.698	924.357	-	20	-
SB-29	1674915.985	546503.908	925.917	-	20	-
SB-30	1674400.146	546548.336	918.95	-	13	-
SB-31	1674906.939	546710.518	924.018	-	24	-
SB-32	1674854.288	547082.245	923.519	-	24	-
SB-33	1675034.648	547584.553	911.823	-	16	-
SB-34	1675336.372	547667.393	917.132	-	16	-
SB-35	1675559.302	547154.437	957.415	-	2*	-
SB-36	1674351.703	546586.224	905.226	-	12	-

**Notes:**

ft amsl - feet above mean sea level

ft bgs - feet below ground surface

\* Refusal encountered during installation

**Table 2: Groundwater Elevation & Depth to Water**

Former Reid Hospital Site  
1401 Chester Boulevard, Richmond, Indiana

Well ID	Top of Casing Elevation	Depth to water	GW Elevation
	ft amsl	ft bgs	ft amsl
MW-1	966.417	7.49	958.927
MW-2	922.828	10.42	912.408
MW-3	928.185	8.88	919.305
MW-4	939.56	22.24	917.320
MW-5	920.978	16.81	904.168
MW-6	923.442	16.48	906.962
MW-7	917.008	10.86	906.148
MW-8	914.975	6.09	908.885

**Notes:**

ft amsl - feet above mean sea level

ft bgs - feet below ground surface

**Table 3**  
**PCB Wipe Sampling Summary Table**  
**Former Reid Hospital Site**  
**Richmond, Indiana**

Analyte	Sample ID	CENTER INCINERATOR	EAST INCINERATOR	WEST INCINERATOR
	Date Units	July 7, 2016 ug	July 7, 2016 ug	July 7, 2016 ug
<b>Method EPA 8082, ug</b>				
Aroclor 1016	ug	< 1.0	< 1.0	< 1.0
Aroclor 1221	ug	< 1.0	< 1.0	< 1.0
Aroclor 1232	ug	< 1.0	< 1.0	< 1.0
Aroclor 1242	ug	< 1.0	< 1.0	< 1.0
Aroclor 1248	ug	< 1.0	< 1.0	< 1.0
Aroclor 1254	ug	< 1.0	< 1.0	< 1.0
Aroclor 1260	ug	< 1.0	< 1.0	< 1.0

Notes:

< = Compound not detected at concentrations above the laboratory reporting detection limit. The laboratory reporting detection limit is shown.

Units are in ug = micrograms

All analyses performed by PACE Analytical Services

**Table 4**  
**2016 Soil Analytical Data Summary Table**  
**Former Reid Hospital Facility Site**  
**Richmond, Indiana**

Analyte	Unit	Migration to Groundwater	IDEM 2016 Screening Levels				Location ID	SB-16	SB-16	SB-17	SB-17	SB-17	SB-17	SB-18	SB-18	SB-18	SB-19	SB-19	SB-19	SB-22		
			Commercial - Industrial Direct Contact	Excavation Worker Direct Contact	Residential Direct Contact	Sample Date	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 14, 2016
			Sample Type	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
<b>Dioxins</b>																						
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
2,3,7,8-Tetrachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/g	300	220	1,300	67	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
<b>Metals, Total</b>																						
Arsenic	mg/kg	5.9	30	920	9.5	8.8	22	8.6	11	7.0	NS	7.3	3.3 J	NS	11 B	2.4 JB	NS	9.5 B				
Chromium	mg/kg	1,000,000	100,000	100,000	100,000	12	11	13	14	11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Lead	mg/kg	270	800	1,000	400	29	9.8	16	23	12	NS	30	6.9	NS	96	9.8	NS	140 F1F2				
Thallium	mg/kg	2.9	12	20	1.1	< 2.3	< 2.5	< 2.4	< 2.5	< 2.6	NS	< 2.6	< 2.6	NS	< 2.5	< 2.7	NS	< 2.7				
<b>Polychlorinated Biphenyls</b>																						
Aroclor 1016	mg/kg	2.7	51	120	5.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.00093 F1		
Aroclor 1221	mg/kg	0.016	8.3	520	2.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.00093		
Aroclor 1232	mg/kg	0.016	7.2	490	2.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.00093		
Aroclor 1242	mg/kg	0.24	9.5	560	3.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.00093		
Aroclor 1248	mg/kg	0.24	9.5	560	3.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.00093		
Aroclor 1254	mg/kg	0.41	9.7	560	1.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.00093		
Aroclor 1260	mg/kg	1.1	9.9	33	3.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.043 F2F1		
<b>Radiological Analytes</b>																						
Alpha, Gross	pCi/g	0.02	-	-	-	24.5	11.4	14.1	15.2	NS	17	18.3	NS	14.9	14.9	NS	16.4	11.1				
Beta particle and photon radioactivity	pCi/g	-	-	-	-	16.9	12.7	19.5	15.1	NS	19	15.9	NS	14.6	10.6	NS	11.9	18.2				
Cesium-137	pCi/g	-	-	-	-	< 0.129	< 0.0648	< 0.137	< 0.160	NS	< 0.132	< 0.103	NS	< 0.148	< 0.0938	NS	< 0.127	< 0.232				
Cobalt-60	pCi/g	-	-	-	-	< 0.0466	0.0543	< 0.159	< 0.192	NS	ND	< 0.121	NS	ND	< 0.0341	NS	ND	< 0.0976				
Lithium	mg/kg	240	2300	3900	220	7.7	8.5	8.7	9.6	7.1	9.3	9.6	5.1 J	14	6.1 B	8.8 B	6.5 B	7.0 B				
Radium 226 by 901.1	pCi/g	0.006	0.021	-	0.0064	0.886	0.654	1.15	1.05	NS	0.908	0.868	NS	0.96	0.525	NS	0.621	1.35				
Radium 226 by 903.1	pCi/g	0.006	0.021	-	0.0064	0.708	0.502	0.620	0.958	NS	0.426	0.420	NS	0.500	0.556	NS	0.436	0.776				
Radium-228	pCi/g	0.02	0.13	-	0.012	0.514	0.402	0.733	0.843	NS	0.78	0.606	NS	< 0.366	< 0.240	NS	< 0.306	1.14				
<b>PAHs</b>																						
1-Methylnaphthalene	mg/kg	1.2	390	390	250	< 1.8	< 0.36	< 0.37	< 0.0073	< 0.0074	NS	1.9	0.0012 J	NS	< 1.7	< 0.36	NS	0.0085 F2				
2-Methylnaphthalene	mg/kg	3.7	3000	6800	340	< 1.8	< 0.36	< 0.37	< 0.0073	< 0.0074	NS	2.2	0.0013 J	NS	< 1.7	< 0.36	NS	< 0.0075 F1F2				
Acenaphthene	mg/kg	110	45,000	100,000	5,000	< 1.8	< 0.36	< 0.37	< 0.0073	< 0.0074	NS	18	0.0084	NS	< 1.7	< 0.36	NS	< 0.0075 F1F2				
Acenaphthylene	mg/kg	-	-	-	-	< 1.8	< 0.36	0.064 JF2F1	0.0032 J	0.00096 J	NS	< 1.9	0.0011 J	NS	1.9	< 0.36	NS	0.18 F2				
Anthracene	mg/kg	1,200	100,000	100,000	25,000	< 1.8	< 0.36	0.053 JF1	0.0011 J	0.00067 J	NS	39	0.020	NS	1.3 J	0.051 J	NS	0.035 F1F2				
Benzo(a)anthracene	mg/kg	-	-	-	-	2.2	0.29 J	0.31 JF2	0.0088	0.0028 J	NS	82	0.054	NS	8	0.23 J	NS	0.15 F1F2				
Benzo(a)pyrene	mg/kg	4.7	2.9	160	0.22	3	0.43	0.3 JF2	0.0079	0.0024 J	NS	69	0.046	NS	7.1	0.22 J	NS	0.17 F2				
Benzo(b)fluoranthene	mg/kg	8.2	29	1,600	2.2	4.1	0.59	0.47 F2	0.014	0.0039 J	NS	89	0.064	NS	10	0.31 J	NS	0.22 F2				
Benzo(k)fluoranthene	mg/kg	80	290	16,000	22	1.4 J	0.21 J	0.16 JF2	0.0052 J	0.0016 J	NS	20	0.023	NS	3.3	0.11 J	NS	0.12 F1F2				
Benzo(g,h,i)perylene	mg/kg	-	-	-	-	2.6	0.3 J	0.21 JF2	0.0077	0.0025 J	NS	50	0.041	NS	5.2	0.16 J	NS	0.16				
Chrysene	mg/kg	250	2,900	100,000	220	2.7	0.37	0.32 JF2	0.0089	0.0038 J	NS	85	0.056	NS	7.7	0.25 J	NS	0.19 F2				
Dibenzo(a,h)anthracene	mg/kg	2.6	2.9	160	0.22	0.54 J	0.05 J	0.047 J	< 0.0073	< 0.0074	NS	9	0.0061 J	NS	1.4 J	0.038 J	NS	0.032				
Fluoranthene	mg/kg	1,800	30,000	68,000	3,400	3.2	0.44	0.58 F2	0.015	0.0065 J	NS	200	0.14	NS	12	0.54	NS	0.23 F2				
Fluorene	mg/kg	110	30,000	68,000	3,400	< 1.8	< 0.36	< 0.37	< 0.0073	< 0.0074	NS	16	0.0084	NS	0.49 J	< 0.36	NS	< 0.0075 F1F2				
Indeno(1,2,3-cd)pyrene	mg/kg	27	29	1,600	2.2	3.4	0.48	0.44	0.0068 J	0.0022 J	NS	61	0.033	NS	6.6	0.36	NS	0.17				
Naphthalene	mg/kg	0.11	170	3,100	53	< 1.8	< 0.36	< 0.37	< 0.0073	< 0.0074	NS	1.3 J	0.0013 J	NS	< 1.7	< 0.36	NS	0.019 F1F2				



**Table 4**  
**2016 Soil Analytical Data Summary Table**  
**Former Reid Hospital Facility Site**  
**Richmond, Indiana**

Analyte	Unit	IDEM 2016 Screening Levels					Location ID	SB-16	SB-16	SB-17	SB-17	SB-17	SB-17	SB-18	SB-18	SB-18	SB-19	SB-19	SB-19	SB-22
		Migration to Groundwater	Commercial - Industrial Direct Contact	Excavation Worker Direct Contact	Residential Direct Contact	Sample Date	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016 Duplicate	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 14, 2016
					Sample Type	0 - 2 ft	8 - 12 ft	0 - 2 ft	0 - 2 ft	6 - 8 ft	16 - 20 ft	0 - 2 ft	6 - 8 ft	16 - 20 ft	0 - 2 ft	6 - 8 ft	8 - 12 ft	0 - 2 ft		
Phenanthrene	mg/kg	-	-	-	-	0.43 J	0.058 J	0.23 J	0.0056 JB	0.0044 JB	NS	150	0.079 B	NS	4.7	0.32 J	NS	0.071 BF1		
Pyrene	mg/kg	260	23,000	51,000	2,500	3.2	0.42	0.49 F2	0.013	0.0050 J	NS	200	0.10	NS	12	0.5	NS	0.26 F2		
<b>Volatile Organic Compounds</b>																				
1,1,1,2-Tetrachloroethane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,1,1-Trichloroethane	mg/kg	1.4	640	640	640	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,1,2,2-Tetrachloroethane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,1,2-Trichloroethane	mg/kg	0.032	6.3	35	2.1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,1-Dichloroethane	mg/kg	0.16	160	1,700	50	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,1-Dichloroethene	mg/kg	0.05	1,000	1,200	320	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,2,4-Trichlorobenzene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,2-Dibromo-3-chloropropane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,2-Dichlorobenzene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,2-Dichloroethane	mg/kg	0.028	20	730	6.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,2-Dichloropropane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,3-Dichlorobenzene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
1,4-Dichlorobenzene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
2-Butanone	mg/kg	23	28,000	28,000	28,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
2-Hexanone	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
4-Methyl-2-pentanone	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Acetone	mg/kg	57	100,000	100,000	85,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Benzene	mg/kg	0.051	51	1,800	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Bromodichloromethane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Bromoform	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Carbon disulfide	mg/kg	4.8	740	740	740	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Carbon tetrachloride	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Chlorobenzene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Chloroethane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Chloroform	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
cis-1,2-Dichloroethene	mg/kg	0.41	2,300	2,400	220	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
cis-1,3-Dichloropropene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Cyclohexane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Dibromochloromethane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Ethylbenzene	mg/kg	16	250	480	81	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Ethylene dibromide	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Freon 11	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Freon 113	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Freon 12	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Isopropylbenzene (Cumene)	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
m,p-Xylenes	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Methyl acetate	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Methyl bromide	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Methyl chloride	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Methyl tert-butyl ether	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Methylcyclohexane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Methylene chloride	mg/kg	0.025	3,200	3,300	490	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
o-Xylene	mg/kg	3.7	430	430	430	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Styrene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Tetrachloroethene	mg/kg	0.045	170	170	110	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Toluene	mg/kg	14	820	820	820	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
tra-1,2-Dichloroethene	mg/kg	0.62	1,900	1,900	1,900	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
tra-1,3-Dichloropropene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Trichloroethene	mg/kg	0.036	19	95	5.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Vinyl chloride	mg/kg	0.014	17	1,300	0.83	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Xylenes	mg/kg	200	260	260	260	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

**Table 4**  
**2016 Soil Analytical Data Summary Table**  
**Former Reid Hospital Facility Site**  
**Richmond, Indiana**

Analyte	Unit	Migration to Groundwater	IDEM 2016 Screening Levels				Residential Direct Contact								
			Commercial - Industrial Direct Contact	Excavation Worker Direct Contact											
			SB-16	SB-16	SB-17	SB-17	SB-17	SB-17	SB-18	SB-18	SB-18	SB-19	SB-19	SB-19	SB-22
			June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 15, 2016	June 14, 2016
			Sample Type	Sample Type	Sample Type	Sample Type	Duplicate								
			Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
			0 - 2 ft	8 - 12 ft	0 - 2 ft	0 - 2 ft	6 - 8 ft	16 - 20 ft	0 - 2 ft	6 - 8 ft	16 - 20 ft	0 - 2 ft	6 - 8 ft	8 - 12 ft	0 - 2 ft

**Notes:**

< = Compound not detected at concentration above the laboratory reporting detection limit. The laboratory reporting detection limit is shown.  
dash = No screening level or not applicable due to non-detect  
NS = Not sampled for that particular analyte in accordance with IBP-approved Investigation Work Plan  
ND = Not detected on gamma emitter scan  
mg/kg = milligrams per kilogram  
pCi/g = picocuries per gram  
pg/g = picogram per gram  
ft = feet  
\* Radiological analytes (Ra-226 and Ra-228) are in reference to the November 2014 EPA Preliminary Remediation Goals (PRGs)  
\*\* Oak Ridge National Laboratory - Indiana background 1 to 1.1 for Radium 226 alone; EPA often uses 5 pCi/g for combination of Radium 226 and Radium 228

**Qualifiers - Organic:**

B = Analyte found in associated blank as well as in sample  
B\* = Compound was found in the blank and sample; ISTD response or retention time outside acceptable limits (TA Sacramento)  
BF1 = Analyte found in associated blank as well as in sample; MS and/or MSD Recovery is outside acceptance limits (TA St. Louis)  
F1F2 = MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits; this is matrix effect (TA St. Louis)  
F2 = MS/MSD RPD exceeds control limits (TA St. Louis)  
F2F1 = MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits (TA Pittsburgh)  
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.  
JB = Estimated concentration, Possible Laboratory Contamination of the Sample  
JB\* = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; Compound was found in the blank and sample; ISTD response or retention time outside acceptable limits (TA Sacramento)  
JF1 = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; MS and/or MSD Recovery is outside acceptance limits (TA St. Louis)  
JF2 = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; MS/MSD RPD exceeds control limits (TA St. Louis)  
JF2F1 = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits (TA St. Louis)  
Jq = Result is < the RL but > or = to the MDL and the concentration is an approximate value; The isomer is qualified as positively identified, but at an estimated quantity because the quantitation is based on the theoretical ratio for these samples  
U\* = Undetected; LCS or LCSD exceeds the control limits.  
UF1 = Undetected; MS and/or MSD Recovery is outside acceptance limits (TA Pittsburgh)  
UF1F2 = Undetected; MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits (TA St. Louis)

**Qualifiers - Inorganic:**

B = Compound was found in the blank and sample (TASL)  
F1F2 = MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits (TASL)  
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.  
JB = Estimated concentration, Possible Laboratory Contamination of the Sample

Analysis performed by TestAmerica - St. Louis, MO, TestAmerica - Pittsburgh, PA, TestAmerica - Sacramento, CA.

IDEM OLQ 2016 Screening Levels as Published in the Remediation Closure Guide (with updates through March 2016)

**Table 4**  
**2016 Soil Analytical Data Summary Table**  
**Former Reid Hospital Facility Site**  
**Richmond, Indiana**

Analyte	Unit	IDEM 2016 Screening Levels																		
		Migration to Groundwater	Commercial - Industrial Direct Contact	Excavation Worker Direct Contact	Residential Direct Contact	Location ID Sample Date Sample Type Depth	SB-22 June 14, 2016 Duplicate 0 - 2 ft	SB-22 June 14, 2016 - 16 - 20 ft	SB-23 June 14, 2016 - 1 - 2 ft	SB-23 June 14, 2016 - 12 - 16 ft	SB-24 June 14, 2016 - 0 - 2 ft	SB-24 June 14, 2016 - 12 - 16 ft	SB-25 June 14, 2016 - 0 - 2 ft	SB-25 June 14, 2016 - 12 - 16 ft	SB-26 June 14, 2016 - 0 - 2 ft	SB-26 June 14, 2016 - 12 - 16 ft	SB-27 June 14, 2016 - 0 - 2 ft	SB-27 June 14, 2016 - 18 - 22 ft	SB-28 June 13, 2016 - 0 - 2 ft	SB-28 June 13, 2016 - 3 - 5 ft
<b>Dioxins</b>																				
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.5 JB
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	11 B*
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.51 JB
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.4 JB*
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 5.5
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 5.5
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 5.5
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 5.5
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.15 J
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 5.5
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.098 J
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 5.5
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 5.5
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 5.5
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 5.5
2,3,7,8-Tetrachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.048 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/g	300	220	1,300	67	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.33 J
<b>Metals, Total</b>																				
Arsenic	mg/kg	5.9	30	920	9.5	16 B	10 B	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.3 B
Chromium	mg/kg	1,000,000	100,000	100,000	100,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	mg/kg	270	800	1,000	400	890	9.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.7
Thallium	mg/kg	2.9	12	20	1.1	< 2.4	< 3.1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 2.5
<b>Polychlorinated Biphenyls</b>																				
Aroclor 1016	mg/kg	2.7	51	120	5.7	< 0.00095	< 0.0010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.0087
Aroclor 1221	mg/kg	0.016	8.3	520	2.8	< 0.00095	< 0.0010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.0087
Aroclor 1232	mg/kg	0.016	7.2	490	2.4	< 0.00095	< 0.0010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.0087
Aroclor 1242	mg/kg	0.24	9.5	560	3.2	< 0.00095	< 0.0010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.0087
Aroclor 1248	mg/kg	0.24	9.5	560	3.2	< 0.00095	< 0.0010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.0087
Aroclor 1254	mg/kg	0.41	9.7	560	1.7	0.018	< 0.0010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.0072 J
Aroclor 1260	mg/kg	1.1	9.9	33	3.4	0.018	< 0.0010	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.0039 J
<b>Radiological Analytes</b>																				
Alpha, Gross	pCi/g	0.02	-	-	-	17.5	15.9	12.7	19.1	17.9	18.5	7.89	10.5	17.7	17.6	16.5	13.4	14	NS	NS
Beta particle and photon radioactivity	pCi/g	-	-	-	-	17.6	15.9	7.21	21.6	14.7	17.7	11.5	19.4	15.5	16.9	15.1	17.5	11.5	NS	NS
Cesium-137	pCi/g	-	-	-	-	< 0.117	< 0.232	< 0.0694	< 0.120	< 0.137	< 0.170	< 0.0674	< 0.148	< 0.148	< 0.145	< 0.0768	< 0.134	< 0.0822	NS	NS
Cobalt-60	pCi/g	-	-	-	-	< 0.0488	< 0.150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0554	NS	NS
Lithium	mg/kg	240	2300	3900	220	9.2 B	8.3 B	3.9 JB	12 B	7.1 B	12 B	6.0 B	12 B	9.9 B	11 B	7.2 B	15 B	8.5 B	NS	NS
Radium 226 by 901.1	pCi/g	0.006	0.021	-	0.0064	1.09	1.22	0.273	1.02	0.561	0.885	0.439	1.03	0.728	1.18	0.538	0.9	0.455	NS	NS
Radium 226 by 903.1	pCi/g	0.006	0.021	-	0.0064	0.728	0.982	0.448	< 0.0877	0.403	0.446	0.447	0.494	0.718	0.763	0.403	0.526	0.547	NS	NS
Radium-228	pCi/g	0.02	0.13	-	0.012	0.567	0.763	0.245	0.543	< 0.283	1.04	0.211	0.632	< 0.430	0.63	0.434	< 0.375	< 0.327	NS	NS
<b>PAHs</b>																				
1-Methylnaphthalene	mg/kg	1.2	390	390	250	< 0.38	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2-Methylnaphthalene	mg/kg	3.7	3000	6800	340	< 0.38	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Acenaphthene	mg/kg	110	45,000	100,000	5,000	< 0.38	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Acenaphthylene	mg/kg	-	-	-	-	0.065 J	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	mg/kg	1,200	100,000	100,000	25,000	0.041 J	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(a)anthracene	mg/kg	-	-	-	-	0.21 J	0.0013 J	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(a)pyrene	mg/kg	4.7	2.9	160	0.22	0.2 J	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(b)fluoranthene	mg/kg	8.2	29	1,600	2.2	0.32 J	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(k)fluoranthene	mg/kg	80	290	16,000	22	0.1 J	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(g,h,i)perylene	mg/kg	-	-	-	-	0.23 J	0.0012 J	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	mg/kg	250	2,900	100,000	220	0.26 J	0.00080 J	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(a,h)anthracene	mg/kg	2.6	2.9	160	0.22	0.052 J	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	mg/kg	1,800	30,000	68,000	3,400	0.33 J	0.0016 J	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	mg/kg	110	30,000	68,000	3,400	< 0.38	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	mg/kg	27	29	1,600	2.2	0.44	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	mg/kg	0.11	170	3,100	53	< 0.38	< 0.0082	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

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**Former Reid Hospital Facility Site**  
**Richmond, Indiana**

Analyte	Unit	IDEM 2016 Screening Levels																	
		Migration to Groundwater	Commercial -		Residential Direct Contact	SB-22	SB-22	SB-23	SB-23	SB-24	SB-24	SB-25	SB-25	SB-26	SB-26	SB-27	SB-27	SB-28	SB-28
			Industrial Direct Contact	Excavation Worker Direct Contact		June 14, 2016 Duplicate	June 14, 2016 -	June 14, 2016 -	June 14, 2016 -	June 14, 2016 -	June 14, 2016 -	June 14, 2016 -	June 14, 2016 -	June 14, 2016 -	June 14, 2016 -	June 14, 2016 -	June 14, 2016 -	June 14, 2016 -	June 13, 2016 -
Phenanthrene	mg/kg	-	-	-	-	0.17 J	0.0026 JB	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	mg/kg	260	23,000	51,000	2,500	0.41	0.0011 J	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
<b>Volatile Organic Compounds</b>																			
1,1,1,2-Tetrachloroethane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,1,1-Trichloroethane	mg/kg	1.4	640	640	640	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,1,2,2-Tetrachloroethane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,1,2-Trichloroethane	mg/kg	0.032	6.3	35	2.1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,1-Dichloroethane	mg/kg	0.16	160	1,700	50	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,1-Dichloroethene	mg/kg	0.05	1,000	1,200	320	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,2,4-Trichlorobenzene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,2-Dibromo-3-chloropropane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,2-Dichlorobenzene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,2-Dichloroethane	mg/kg	0.028	20	730	6.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,2-Dichloropropane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,3-Dichlorobenzene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,4-Dichlorobenzene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2-Butanone	mg/kg	23	28,000	28,000	28,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2-Hexanone	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
4-Methyl-2-pentanone	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Acetone	mg/kg	57	100,000	100,000	85,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzene	mg/kg	0.051	51	1,800	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Bromodichloromethane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Bromoform	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Carbon disulfide	mg/kg	4.8	740	740	740	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Carbon tetrachloride	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chlorobenzene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chloroethane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chloroform	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
cis-1,2-Dichloroethene	mg/kg	0.41	2,300	2,400	220	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
cis-1,3-Dichloropropene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cyclohexane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibromochloromethane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Ethylbenzene	mg/kg	16	250	480	81	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Ethylene dibromide	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Freon 11	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Freon 113	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Freon 12	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Isopropylbenzene (Cumene)	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
m,p-Xylenes	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Methyl acetate	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Methyl bromide	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Methyl chloride	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Methyl tert-butyl ether	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Methylcyclohexane	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Methylene chloride	mg/kg	0.025	3,200	3,300	490	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
o-Xylene	mg/kg	3.7	430	430	430	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Styrene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Tetrachloroethene	mg/kg	0.045	170	170	110	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Toluene	mg/kg	14	820	820	820	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
tra-1,2-Dichloroethene	mg/kg	0.62	1,900	1,900	1,900	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
tra-1,3-Dichloropropene	mg/kg	-	-	-	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Trichloroethene	mg/kg	0.036	19	95	5.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vinyl chloride	mg/kg	0.014	17	1,300	0.83	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Xylenes	mg/kg	200	260	260	260	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

**Table 4**  
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**Former Reid Hospital Facility Site**  
**Richmond, Indiana**

Analyte	Unit	Migration to Groundwater	IDEM 2016 Screening Levels				Residential Direct Contact									
			Commercial - Industrial Direct Contact	Excavation Worker Direct Contact												
Location ID			SB-22	SB-22	SB-23	SB-23	SB-24	SB-24	SB-25	SB-25	SB-26	SB-26	SB-27	SB-27	SB-28	SB-28
Sample Date			June 14, 2016	June 14, 2016	June 14, 2016	June 14, 2016	June 14, 2016	June 14, 2016	June 14, 2016	June 14, 2016	June 14, 2016	June 14, 2016	June 14, 2016	June 14, 2016	June 13, 2016	June 13, 2016
Sample Type			Duplicate	-	-	-	-	-	-	-	-	-	-	-	-	-
Depth			0 - 2 ft	16 - 20 ft	1 - 2 ft	12 - 16 ft	0 - 2 ft	12 - 16 ft	0 - 2 ft	12 - 16 ft	0 - 2 ft	12 - 16 ft	0 - 2 ft	18 - 22 ft	0 - 2 ft	3 - 5 ft

**Notes:**  
 < = Compound not detected at concentration above the laboratory reporting detection limit. The laboratory reporting detection limit is shown as a dash = No screening level or not applicable due to non-detect  
 NS = Not sampled for that particular analyte in accordance with IBP-approved Investigation Work Plan  
 ND = Not detected on gamma emitter scan  
 mg/kg = milligrams per kilogram  
 pCi/g = picocuries per gram  
 pg/g = picogram per gram  
 ft = feet  
 \* Radiological analytes (Ra-226 and Ra-228) are in reference to the November 2014 EPA Preliminary Remediation Goals (PRGs)  
 \*\* Oak Ridge National Laboratory - Indiana background 1 to 1.1 for Radium 226 alone; EPA often uses 5 pCi/g for combination of Radium

**Qualifiers - Organic:**  
 B = Analyte found in associated blank as well as in sample  
 B\* = Compound was found in the blank and sample; ISTD response or retention time outside acceptable limits (TA Sacramento)  
 BF1 = Analyte found in associated blank as well as in sample; MS and/or MSD Recovery is outside acceptance limits (TA St. Louis)  
 F1F2 = MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits; this is matrix effect (TA St. Louis)  
 F2 = MS/MSD RPD exceeds control limits (TA St. Louis)  
 F2F1 = MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits (TA Pittsburgh)  
 J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.  
 JB = Estimated concentration, Possible Laboratory Contamination of the Sample  
 JB\* = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; Comparison  
 JF1 = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; MS and/or  
 JF2 = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; MS and/or  
 JF2F1 = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; MS and/or  
 Jq = Result is < the RL but > or = to the MDL and the concentration is an approximate value; The isomer is qualified as positively identified  
 U\* = Undetected; LCS or LCSD exceeds the control limits.  
 UF1 = Undetected; MS and/or MSD Recovery is outside acceptance limits (TA Pittsburgh)  
 UF1F2 = Undetected; MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits (TA St. Louis)

**Qualifiers - Inorganic:**  
 B = Compound was found in the blank and sample (TASL)  
 F1F2 = MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits (TASL)  
 J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.  
 JB = Estimated concentration, Possible Laboratory Contamination of the Sample

Analysis performed by TestAmerica - St. Louis, MO, TestAmerica - Pittsburgh, PA, TestAmerica - Sacramento, CA.

IDEM OLQ 2016 Screening Levels as Published in the Remediation Closure Guide (with updates through March 2016)

**Table 4**  
**2016 Soil Analytical Data Summary Table**  
**Former Reid Hospital Facility Site**  
**Richmond, Indiana**

Analyte	Unit	IDEM 2016 Screening Levels				Location ID	SB-28	SB-30	SB-35	SB-35
		Migration to Groundwater	Commercial - Industrial Direct Contact	Excavation Worker Direct Contact	Residential Direct Contact	Sample Date	June 13, 2016	June 14, 2016	June 15, 2016	June 15, 2016
					Sample Type	-	-	-	Duplicate	
					Depth	17 - 20 ft	1 - 3 ft	0 - 2 ft	0 - 2 ft	
<b>Dioxins</b>										
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	2.7 J	8.8 J	
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	pg/g	-	-	-	-	NS	NS	72 B	190 B	
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	1.3 J	4.3 J	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	6.1	19	
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	< 5.3	< 5.5	
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	< 5.3	0.48 J	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	0.084 Jq	0.26 Jq	
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	< 5.3	0.22 J	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	0.29 J	0.68 J	
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	< 5.3	< 5.5	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/g	3,600	4,700	210,000	1,400	NS	NS	0.27 Jq	0.74 J	
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	< 5.3	0.14 Jq	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/g	-	-	-	-	NS	NS	0.14 J	0.25 J	
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	< 5.3	0.24 Jq	
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	< 5.3	< 5.5	
2,3,7,8-Tetrachlorodibenzofuran	pg/g	-	-	-	-	NS	NS	0.17 Jq	0.55 J	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/g	300	220	1,300	67	NS	NS	0.38 Jq	0.52 J	
<b>Metals, Total</b>										
Arsenic	mg/kg	5.9	30	920	9.5	5.4 B	NS	NS	NS	
Chromium	mg/kg	1,000,000	100,000	100,000	100,000	NS	NS	NS	NS	
Lead	mg/kg	270	800	1,000	400	13	NS	NS	NS	
Thallium	mg/kg	2.9	12	20	1.1	< 2.6	NS	< 2.4	NS	
<b>Polychlorinated Biphenyls</b>										
Aroclor 1016	mg/kg	2.7	51	120	5.7	< 0.00090	NS	NS	NS	
Aroclor 1221	mg/kg	0.016	8.3	520	2.8	< 0.00090	NS	NS	NS	
Aroclor 1232	mg/kg	0.016	7.2	490	2.4	< 0.00090	NS	NS	NS	
Aroclor 1242	mg/kg	0.24	9.5	560	3.2	< 0.00090	NS	NS	NS	
Aroclor 1248	mg/kg	0.24	9.5	560	3.2	< 0.00090	NS	NS	NS	
Aroclor 1254	mg/kg	0.41	9.7	560	1.7	< 0.00090	NS	NS	NS	
Aroclor 1260	mg/kg	1.1	9.9	33	3.4	< 0.00090	NS	NS	NS	
<b>Radiological Analytes</b>										
Alpha, Gross	pCi/g	0.02	-	-	-	11.3	NS	21.9	NS	
Beta particle and photon radioactivity	pCi/g	-	-	-	-	22.3	NS	16.9	NS	
Cesium-137	pCi/g	-	-	-	-	< 0.121	NS	< 0.105	NS	
Cobalt-60	pCi/g	-	-	-	-	< 0.0723	NS	ND	NS	
Lithium	mg/kg	240	2300	3900	220	15 B	NS	6.8	NS	
Radium 226 by 901.1	pCi/g	0.006	0.021	-	0.0064	0.923	NS	0.83	NS	
Radium 226 by 903.1	pCi/g	0.006	0.021	-	0.0064	0.533	NS	0.680	NS	
Radium-228	pCi/g	0.02	0.13	-	0.012	0.694	NS	0.693	NS	
<b>PAHs</b>										
1-Methylnaphthalene	mg/kg	1.2	390	390	250	NS	NS	NS	NS	
2-Methylnaphthalene	mg/kg	3.7	3000	6800	340	NS	NS	NS	NS	
Acenaphthene	mg/kg	110	45,000	100,000	5,000	NS	NS	NS	NS	
Acenaphthylene	mg/kg	-	-	-	-	NS	NS	NS	NS	
Anthracene	mg/kg	1,200	100,000	100,000	25,000	NS	NS	NS	NS	
Benzo(a)anthracene	mg/kg	-	-	-	-	NS	NS	NS	NS	
Benzo(a)pyrene	mg/kg	4.7	2.9	160	0.22	NS	NS	NS	NS	
Benzo(b)fluoranthene	mg/kg	8.2	29	1,600	2.2	NS	NS	NS	NS	
Benzo(k)fluoranthene	mg/kg	80	290	16,000	22	NS	NS	NS	NS	
Benzo(g,h,i)perylene	mg/kg	-	-	-	-	NS	NS	NS	NS	
Chrysene	mg/kg	250	2,900	100,000	220	NS	NS	NS	NS	
Dibenzo(a,h)anthracene	mg/kg	2.6	2.9	160	0.22	NS	NS	NS	NS	
Fluoranthene	mg/kg	1,800	30,000	68,000	3,400	NS	NS	NS	NS	
Fluorene	mg/kg	110	30,000	68,000	3,400	NS	NS	NS	NS	
Indeno(1,2,3-cd)pyrene	mg/kg	27	29	1,600	2.2	NS	NS	NS	NS	
Naphthalene	mg/kg	0.11	170	3,100	53	NS	NS	NS	NS	

**Table 4**  
**2016 Soil Analytical Data Summary Table**  
**Former Reid Hospital Facility Site**  
**Richmond, Indiana**

Analyte	Unit	Migration to Groundwater	IDEM 2016 Screening Levels			Location ID	SB-28	SB-30	SB-35	SB-35
			Commercial - Industrial Direct Contact	Excavation Worker Direct Contact	Residential Direct Contact	Sample Date	June 13, 2016	June 14, 2016	June 15, 2016	June 15, 2016
						Sample Type	-	-	-	Duplicate
						Depth	17 - 20 ft	1 - 3 ft	0 - 2 ft	0 - 2 ft
Phenanthrene	mg/kg	-	-	-	-		NS	NS	NS	NS
Pyrene	mg/kg	260	23,000	51,000	2,500		NS	NS	NS	NS
<b>Volatile Organic Compounds</b>										
1,1,1,2-Tetrachloroethane	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
1,1,1-Trichloroethane	mg/kg	1.4	640	640	640		NS	< 0.0067	NS	NS
1,1,2,2-Tetrachloroethane	mg/kg	-	-	-	-		NS	< 0.0067 *	NS	NS
1,1,2-Trichloroethane	mg/kg	0.032	6.3	35	2.1		NS	< 0.0067	NS	NS
1,1-Dichloroethane	mg/kg	0.16	160	1,700	50		NS	< 0.0067	NS	NS
1,1-Dichloroethene	mg/kg	0.05	1,000	1,200	320		NS	< 0.0067	NS	NS
1,2,4-Trichlorobenzene	mg/kg	-	-	-	-		NS	< 0.0067 *	NS	NS
1,2-Dibromo-3-chloropropane	mg/kg	-	-	-	-		NS	< 0.013 *	NS	NS
1,2-Dichlorobenzene	mg/kg	-	-	-	-		NS	< 0.0067 *	NS	NS
1,2-Dichloroethane	mg/kg	0.028	20	730	6.4		NS	< 0.0067	NS	NS
1,2-Dichloropropane	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
1,3-Dichlorobenzene	mg/kg	-	-	-	-		NS	< 0.0067 *	NS	NS
1,4-Dichlorobenzene	mg/kg	-	-	-	-		NS	< 0.0067 *	NS	NS
2-Butanone	mg/kg	23	28,000	28,000	28,000		NS	< 0.027	NS	NS
2-Hexanone	mg/kg	-	-	-	-		NS	< 0.027	NS	NS
4-Methyl-2-pentanone	mg/kg	-	-	-	-		NS	< 0.027	NS	NS
Acetone	mg/kg	57	100,000	100,000	85,000		NS	< 0.027	NS	NS
Benzene	mg/kg	0.051	51	1,800	17		NS	< 0.0067	NS	NS
Bromodichloromethane	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Bromoform	mg/kg	-	-	-	-		NS	< 0.0067 *	NS	NS
Carbon disulfide	mg/kg	4.8	740	740	740		NS	< 0.0067	NS	NS
Carbon tetrachloride	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Chlorobenzene	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Chloroethane	mg/kg	-	-	-	-		NS	< 0.013	NS	NS
Chloroform	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
cis-1,2-Dichloroethene	mg/kg	0.41	2,300	2,400	220		NS	< 0.0067	NS	NS
cis-1,3-Dichloropropene	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Cyclohexane	mg/kg	-	-	-	-		NS	< 0.013	NS	NS
Dibromochloromethane	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Ethylbenzene	mg/kg	16	250	480	81		NS	< 0.0067	NS	NS
Ethylene dibromide	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Freon 11	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Freon 113	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Freon 12	mg/kg	-	-	-	-		NS	< 0.013	NS	NS
Isopropylbenzene (Cumene)	mg/kg	-	-	-	-		NS	< 0.0067 *	NS	NS
m,p-Xylenes	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Methyl acetate	mg/kg	-	-	-	-		NS	< 0.033	NS	NS
Methyl bromide	mg/kg	-	-	-	-		NS	< 0.013	NS	NS
Methyl chloride	mg/kg	-	-	-	-		NS	< 0.013	NS	NS
Methyl tert-butyl ether	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Methylcyclohexane	mg/kg	-	-	-	-		NS	< 0.013	NS	NS
Methylene chloride	mg/kg	0.025	3,200	3,300	490		NS	< 0.0067	NS	NS
o-Xylene	mg/kg	3.7	430	430	430		NS	< 0.0067	NS	NS
Styrene	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Tetrachloroethene	mg/kg	0.045	170	170	110		NS	< 0.0067	NS	NS
Toluene	mg/kg	14	820	820	820		NS	< 0.0067	NS	NS
tra-1,2-Dichloroethene	mg/kg	0.62	1,900	1,900	1,900		NS	< 0.0067	NS	NS
tra-1,3-Dichloropropene	mg/kg	-	-	-	-		NS	< 0.0067	NS	NS
Trichloroethene	mg/kg	0.036	19	95	5.7		NS	< 0.0067	NS	NS
Vinyl chloride	mg/kg	0.014	17	1,300	0.83		NS	< 0.0067	NS	NS
Xylenes	mg/kg	200	260	260	260		NS	< 0.013	NS	NS

**Table 4**  
**2016 Soil Analytical Data Summary Table**  
**Former Reid Hospital Facility Site**  
**Richmond, Indiana**

Analyte	Unit	Migration to Groundwater	IDEM 2016 Screening Levels			Residential Direct Contact
			Commercial - Industrial Direct Contact	Excavation Worker Direct Contact		
Location ID						
Sample Date						
Sample Type						
Depth						
			SB-28	SB-30	SB-35	SB-35
			June 13, 2016	June 14, 2016	June 15, 2016	June 15, 2016
			-	-	-	Duplicate
			17 - 20 ft	1 - 3 ft	0 - 2 ft	0 - 2 ft

**Notes:**

< = Compound not detected at concentration above the laboratory reporting detection limit. The laboratory reporting detection limit is shown as a dash = No screening level or not applicable due to non-detect  
 NS = Not sampled for that particular analyte in accordance with IBP-approved Investigation Work Plan  
 ND = Not detected on gamma emitter scan  
 mg/kg = milligrams per kilogram  
 pCi/g = picocuries per gram  
 pg/g = picogram per gram  
 ft = feet  
 \* Radiological analytes (Ra-226 and Ra-228) are in reference to the November 2014 EPA Preliminary Remediation Goals (PRGs)  
 \*\* Oak Ridge National Laboratory - Indiana background 1 to 1.1 for Radium 226 alone; EPA often uses 5 pCi/g for combination of Radium

**Qualifiers - Organic:**

B = Analyte found in associated blank as well as in sample  
 B\* = Compound was found in the blank and sample; ISTD response or retention time outside acceptable limits (TA Sacramento)  
 BF1 = Analyte found in associated blank as well as in sample; MS and/or MSD Recovery is outside acceptance limits (TA St. Louis)  
 F1F2 = MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits; this is matrix effect (TA St. Louis)  
 F2 = MS/MSD RPD exceeds control limits (TA St. Louis)  
 F2F1 = MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits (TA Pittsburgh)  
 J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.  
 JB = Estimated concentration, Possible Laboratory Contamination of the Sample  
 JB\* = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; Comparison  
 JF1 = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; MS and/or  
 JF2 = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; MS and/or  
 JF2F1 = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample; MS and/or  
 Jq = Result is < the RL but > or = to the MDL and the concentration is an approximate value; The isomer is qualified as positively identified  
 U\* = Undetected; LCS or LCSD exceeds the control limits.  
 UF1 = Undetected; MS and/or MSD Recovery is outside acceptance limits (TA Pittsburgh)  
 UF1F2 = Undetected; MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits (TA St. Louis)

**Qualifiers - Inorganic:**

B = Compound was found in the blank and sample (TASL)  
 F1F2 = MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits (TASL)  
 J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.  
 JB = Estimated concentration, Possible Laboratory Contamination of the Sample

Analysis performed by TestAmerica - St. Louis, MO, TestAmerica - Pittsburgh, PA, TestAmerica - Sacramento, CA.

IDEM OLQ 2016 Screening Levels as Published in the Remediation Closure Guide (with updates through March 2016)



**Table 5**  
**2016 Groundwater Analytical Data Summary Table**  
**Former Reid Hospital Site**  
**Richmond, Indiana**

Analyte	Unit	Location ID	MW-1	MW-2	MW-3	MW-5	MW-6	MW-6	MW-7	MW-7	MW-8
		Sample Date	July 7, 2016	June 21, 2016	June 20, 2016	June 20, 2016	June 20, 2016	June 20, 2016	June 20, 2016	June 20, 2016	July 7, 2016
		Sample Type						Duplicate			
		IDEM									
		Groundwater									
		Tapwater SL									
<b>Dioxins</b>											
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	pg/l	-	19 JB	1.1 JB	1.0 JqB	1.8 JB	0.91 JB	1.7 JB	NS	3.7 JB	0.85 JBq
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	pg/l	-	640 B	2.9 JBq	2.2 JqB	2.7 JB	3.4 JB	24 JB	NS	18 JB	2.6 JB
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/l	-	15 JB	< 48	0.30 JB	0.44 JqB	0.28 JqB	0.70 JB	NS	1.5 JB	< 49
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/l	110	43 JB	0.84 JBq	0.75 JB	0.69 JB	0.45 JqB	1.3 JB	NS	2.5 JB	0.61 JB
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/l	-	1.3 JB	0.41 J	< 48	0.35 Jq	< 47	< 48	NS	0.90 JB	< 49
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/l	-	1.2 JB	0.37 J	< 48	0.30 J	0.26 Jq	0.32 Jq	NS	0.74 JB	0.24 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/l	110	1.3 J	< 48	< 48	0.15 Jq	< 47	< 48	NS	< 47	< 49
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/l	-	1.6 JB	0.23 Jq	< 48	0.28 J	< 47	< 48	NS	0.72 JB	< 49
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/l	110	2.7 JB	0.41 J	< 48	0.25 Jq	< 47	< 48	NS	< 47	< 49
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/l	-	0.80 JB	0.33 J	< 48	< 48	0.23 J	< 48	NS	0.46 JqB	< 49
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/l	110	5.3 JB	0.44 JBq	< 48	0.34 JB	0.22 JqB	0.30 JB	NS	1.0 JB	< 49
1,2,3,7,8-Pentachlorodibenzofuran	pg/l	-	< 47	< 48	< 48	< 48	< 47	< 48	NS	< 47	< 49
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/l	-	< 47	< 48	< 48	< 48	< 47	< 48	NS	< 47	< 49
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/l	-	1.0 J	< 48	< 48	< 48	< 47	0.22 J	NS	0.97 J	< 49
2,3,4,7,8-Pentachlorodibenzofuran	pg/l	-	< 47	< 48	< 48	< 48	< 47	< 48	NS	< 47	< 49
2,3,7,8-Tetrachlorodibenzofuran	pg/l	-	0.73 J	< 9.6	< 9.6	< 9.5	< 9.4	< 9.5	NS	< 9.5	< 9.7
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/l	30	0.90 J	< 9.6	< 9.6	< 9.5	< 9.4	< 9.5	NS	< 9.5	< 9.7
<b>Metals, Dissolved</b>											
Arsenic (Total)	µg/L	10	NS	11	7.6 J	19	19	19	3.6 J	NS	15
Arsenic (Dissolved)	µg/L	10	NS	11	2.5 J	19	19	19	4.9 J	NS	15
Chromium (Total)	µg/L	22,000	NS	< 10	1.1 J	< 10	1.2 J	1.7 J	< 10	NS	< 10
Chromium (Dissolved)	µg/L	22,000	NS	< 10	< 10	< 10	< 10	< 10	3.6 J	NS	1.1 J
Thallium (Total)	µg/L	0.14	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NS	< 2.0
Thallium (Dissolved)	µg/L	0.14	NS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NS	< 2.0
<b>Polychlorinated Biphenyls</b>											
Aroclor 1016	µg/L	1.4	NS	NS	NS	< 0.0094 *	NS	NS	NS	NS	NS
Aroclor 1221	µg/L	0.047	NS	NS	NS	< 0.0094	NS	NS	NS	NS	NS
Aroclor 1232	µg/L	0.047	NS	NS	NS	< 0.0094	NS	NS	NS	NS	NS
Aroclor 1242	µg/L	0.078	NS	NS	NS	< 0.0094	NS	NS	NS	NS	NS
Aroclor 1248	µg/L	0.078	NS	NS	NS	< 0.0094	NS	NS	NS	NS	NS
Aroclor 1254	µg/L	0.078	NS	NS	NS	< 0.0094	NS	NS	NS	NS	NS
Aroclor 1260	µg/L	0.078	NS	NS	NS	< 0.0094	NS	NS	NS	NS	NS
<b>Radiological Analytes</b>											
Alpha, Gross	pCi/l	15	NS	< 9.86 G	< 11.3 G	< 14.1 G	< 7.29 G	14.1 G	< 6.75 G	NS	< 7.08 G
Beta particle and photon radioactivity	pCi/l	50	NS	25.8 G	< 4.55 G	16.7 G	< 3.94	< 4.74 G	< 3.39	NS	< 4.57 G
Cesium-137	pCi/l	1.2	NS	< 15.1	< 12.0	< 10.4	< 17.7	< 14.1	< 15.2	NS	< 17.1
Cobalt-60	pCi/l	-	NS	< 18.7	< 6.43	< 10.2	< 17.2	< 8.60	< 14.3	NS	< 23.4

**Table 5**  
**2016 Groundwater Analytical Data Summary Table**  
**Former Reid Hospital Site**  
**Richmond, Indiana**

Analyte	Unit	Location ID	MW-1	MW-2	MW-3	MW-5	MW-6	MW-6	MW-7	MW-7	MW-8
		Sample Date	July 7, 2016	June 21, 2016	June 20, 2016	June 20, 2016	June 20, 2016	June 20, 2016	June 20, 2016	June 20, 2016	July 7, 2016
		Sample Type									
		IDEM									
		Groundwater									
		Tapwater SL									
Lithium (Total)	µg/L	40	NS	1.8 J	4.2 J	54	8.9	8.9	2.5 J	NS	2.2 J
Lithium (Dissolved)	µg/L	40	NS	1.6 J	4.2 J	54	8.7	8.5	4.4 J	NS	2.1 J
Radium-226 by 903.1	pCi/L	-	NS	0.558	0.501	0.735	0.897	0.531	1.28	NS	0.430
<b>Semi-Volatile Organic Compounds SIM</b>											
1-Methylnaphthalene	µg/L	-	NS	< 0.19	< 0.19	< 0.19	< 0.19 *	< 0.19 *	< 0.19 *	NS	< 0.19
2-Methylnaphthalene	µg/L	-	NS	< 0.19	< 0.19	< 0.19	< 0.19 *	< 0.19 *	< 0.19 *	NS	< 0.19
Acenaphthene	µg/L	530	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NS	< 0.19
Acenaphthylene	µg/L	-	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NS	< 0.19
Anthracene	µg/L	1,800	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NS	< 0.19
Benzo(a)anthracene	µg/L	-	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NS	< 0.19
Benzo(a)pyrene	µg/L	0.2	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19 F1	NS	< 0.19 F1
Benzo(b)fluoranthene	µg/L	0.34	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19 F1F2	NS	< 0.19 F1
Benzo(g,h,i)perylene	µg/L	-	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19 F1F2	NS	< 0.19 F1
Benzo(k)fluoranthene	µg/L	3.4	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NS	< 0.19
Chrysene	µg/L	34	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NS	< 0.19
Dibenzo(a,h)anthracene	µg/L	0.034	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19 F1	NS	< 0.19 F1F2
Fluoranthene	µg/L	800	NS	0.037 J	< 0.19	0.034 J	< 0.19	< 0.19	< 0.19	NS	< 0.19
Fluorene	µg/L	290	NS	0.063 J	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NS	< 0.19
Indeno(1,2,3-cd)pyrene	µg/L	0.34	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19 F1	NS	< 0.19 F1
Naphthalene	µg/L	1.7	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NS	< 0.19
Phenanthrene	µg/L	-	NS	0.13 J	0.078 J	0.11 J	< 0.19	< 0.19	< 0.19	NS	0.084 J
Pyrene	µg/L	120	NS	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NS	< 0.19

Notes:

< = Compound not detected at concentration above the laboratory reporting detection limit. The laboratory reporting detection limit is shown.

Empty cells = Not analyzed

- = No Standard

NS = Not sampled for the analyte

ND = not detected in laboratory scan

µg/L = micrograms per liter

pCi/l = picocuries per liter

pg/l = picogram per liter

Analysis performed by PACE, TestAmerica - St. Louis, MO, TestAmerica - Sacramento, CA, TestAmerica - Pittsburg, PA.

IDEM OLQ 2016 Screening Levels Groundwater Tap Residential as published in the Remediation Closure Guide (with updates through March 2016)

Gross Beta screening level is based on the California State Water Resource Control Board to trigger potential additional testing - IDEM does not have a published value

Cesium-137 screening level is from USEPA PRG 2014 for residential tap water ingestion.

Gross Alpha screening level is the USEPA MCL.

**Qualifiers - Organic:**

B = Analyte found in associated blank as well as in sample.

J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.

JB = Estimated concentration, Possible Laboratory Contamination of the Sample

JBq = Result is < the RL but > or = to the MDL and the conc is an approximate value; isomer is qualified as positively identified, but an estimated quantity because quantitation based on the theoretical ratio for samples,

Possible Lab contamination of samples (TASAC)

Jq = Result is < the RL but > or = to the MDL and the concentration is an approximate value; The isomer is qualified as positively identified, but at an estimated quantity because the quantitation is based on the theoretical ratio for these samples

JqB = Result is < the RL but > or = to the MDL and the conc is an approximate value; isomer is qualified as positively identified, but an estimated quantity because quantitation based on the theoretical ratio for samples, Possible

Lab contamination of samples (TASAC)

U\* = Undetected; LCS or LCSd exceeds the control limits.

UF1 = Undetected; MS and/or MSD Recovery is outside acceptance limits (TASL)

**Table 5**  
**2016 Groundwater Analytical Data Summary Table**  
**Former Reid Hospital Site**  
**Richmond, Indiana**

	Location ID	MW-1	MW-2	MW-3	MW-5	MW-6	MW-6	MW-7	MW-7	MW-8
	Sample Date	July 7, 2016	June 21, 2016	June 20, 2016	June 20, 2016	June 20, 2016	June 20, 2016	June 20, 2016	July 7, 2016	#####
	Sample Type						<i>Duplicate</i>			
	IDEM									
	Groundwater									
<b>Analyte</b>	<b>Unit</b>	<b>Tapwater SL</b>								

UF1F2 = Undetected; MS and/or MSD Recovery is outside acceptance limits; MS/MSD RPD exceeds control limits (TASL)

**Qualifiers - Inorganic:**

G = Estimate is greater than value shown.

J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.

U G = Undetected; Estimate is greater than value shown (TASL)

**Table 6**  
**Rinsate & Equipment Blank Analytical Data Summary Table**  
**Former Reid Hospital Site**  
**Richmond, Indiana**

Analyte	Unit	RB-1	RB-2	EB-1	EB-2	EB-1
		June 16, 2016	June 16, 2016	June 16, 2016	June 16, 2016	June 21, 2016
		Rinse Blank	Rinse Blank	Equipment Blank	Equipment Blank	Equipment Blank
<b>Dioxins</b>						
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	pg/l	4.9 JB	2.0 JB	0.71 JB	1.3 JB	1.7 JB
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	pg/l	7.9 JB	10 JB	3.0 JB	5.7 JB	3.7 JB
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/l	1.3 JB	0.86 JB	< 47	0.40 JB	0.54 JB
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/l	1.6 JB	1.7 JB	0.49 JqB	0.76 JqB	0.88 JB
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/l	0.78 JqB	< 48	< 47	< 48	0.39 JqB
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/l	0.70 J	< 48	< 47	< 48	0.37 Jq
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/l	0.55 J	< 48	< 47	< 48	< 48
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/l	0.89 J	< 48	< 47	< 48	0.43 Jq
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/l	0.48 JqB	0.40 JqB	< 47	< 48	< 48
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/l	< 48	< 48	< 47	< 48	< 48
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/l	< 48	0.38 J	< 47	< 48	0.45 JqB
1,2,3,7,8-Pentachlorodibenzofuran	pg/l	< 48	< 48	< 47	< 48	< 48
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/l	< 48	< 48	< 47	< 48	< 48
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/l	0.64 J	< 48	< 47	< 48	< 48
2,3,4,7,8-Pentachlorodibenzofuran	pg/l	< 48	< 48	< 47	< 48	< 48
2,3,7,8-Tetrachlorodibenzofuran	pg/l	< 9.5	< 9.5	< 9.5	< 9.5	< 9.6
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/l	< 9.5	< 9.5	< 9.5	< 9.5	< 9.6
<b>Metals, Dissolved</b>						
Arsenic (Total)	µg/L	< 10	< 10	< 10	< 10	< 10
Arsenic (Dissolved)	µg/L	< 10	< 10	< 10	< 10	< 10
Chromium (Total)	µg/L	< 10	< 10	< 10	< 10	< 10
Chromium (Dissolved)	µg/L	< 10	< 10	< 10	< 10	< 10
Thallium (Total)	µg/L	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Thallium (Dissolved)	µg/L	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
<b>Polychlorinated Biphenyls</b>						
Aroclor 1016	µg/L	< 0.0095 *	< 0.0095 *	< 0.0095 *	< 0.0095 *	NS
Aroclor 1221	µg/L	< 0.0095	< 0.0095	< 0.0095	< 0.0095	NS
Aroclor 1232	µg/L	< 0.0095	< 0.0095	< 0.0095	< 0.0095	NS
Aroclor 1242	µg/L	< 0.0095	< 0.0095	< 0.0095	< 0.0095	NS
Aroclor 1248	µg/L	< 0.0095	< 0.0095	< 0.0095	< 0.0095	NS
Aroclor 1254	µg/L	< 0.0095	< 0.0095	< 0.0095	< 0.0095	NS
Aroclor 1260	µg/L	< 0.0095 *	< 0.0095 *	< 0.0095 *	< 0.0095 *	NS
<b>Radiological Analytes</b>						
Alpha, Gross	pCi/l	< 0.981	< 0.915	< 0.839	< 0.747	< 1.33
Beta particle and photon radioactivity	pCi/l	< 1.02	< 0.938	< 0.852	< 0.864	< 0.879
Cesium-137	pCi/l	< 11.6	< 13.0	< 19.5	< 15.0	< 16.2
Cobalt-60	pCi/l	< 6.99	< 14.3	< 11.8	8.07	< 17.3

**Table 6**  
**Rinsate & Equipment Blank Analytical Data Summary Table**  
**Former Reid Hospital Site**  
**Richmond, Indiana**

Analyte	Unit	RB-1	RB-2	EB-1	EB-2	EB-1
		June 16, 2016 <i>Rinse Blank</i>	June 16, 2016 <i>Rinse Blank</i>	June 16, 2016 <i>Equipment Blank</i>	June 16, 2016 <i>Equipment Blank</i>	June 21, 2016 <i>Equipment Blank</i>
Lithium (Total)	µg/L	NS	NS	NS	NS	NS
Lithium (Dissolved)	µg/L	NS	NS	NS	NS	NS
Radium-226 by 903.1	pCi/L	ND	ND	ND	ND	ND
<b>Semi-Volatile Organic Compounds SIM</b>						
1-Methylnaphthalene	µg/L	< 0.19 *	< 0.19 *	< 0.19 *	< 0.19 *	< 0.19
2-Methylnaphthalene	µg/L	< 0.19 *	< 0.19 *	< 0.19 *	< 0.19 *	< 0.19
Acenaphthene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Acenaphthylene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Anthracene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Benzo(a)anthracene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Benzo(a)pyrene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Benzo(b)fluoranthene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Benzo(g,h,i)perylene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Benzo(k)fluoranthene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Chrysene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Dibenzo(a,h)anthracene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Fluoranthene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Fluorene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Indeno(1,2,3-cd)pyrene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Naphthalene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Phenanthrene	µg/L	<b>0.096 JB</b>	<b>0.092 JB</b>	<b>0.11 JB</b>	<b>0.089 JB</b>	<b>0.067 J</b>
Pyrene	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19

Notes:

< = Compound not detected at concentration above the laboratory reporting detection limit. The laboratory reporting detection limit is shown.

Empty cells = Not analyzed

NS = Not sampled for the analyte

ND = not detected in laboratory scan

µg/L = micrograms per liter

pCi/l = picocuries per liter

pg/l = picogram per liter

Analysis performed by PACE, TestAmerica - St. Louis, MO, TestAmerica - Sacramento, CA, TestAmerica - Pittsburg, PA.

IDEM OLQ 2016 Screening Levels Groundwater Tap Residential as published in the Remediation Closure Guide (with updates through March 2016)

Gross Beta screening level is based on the California State Water Resource Control Board to trigger potential additional testing - IDEM does not have a published value

Cesium-137 screening level is from USEPA PRG 2014 for residential tap water ingestion.

Gross Alpha screening level is the USEPA MCL.

**Qualifiers - Organic:**

B = Analyte found in associated blank as well as in sample.

J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.

JB = Estimated concentration, Possible Laboratory Contamination of the Sample

JBq = Result is < the RL but > or = to the MDL and the conc is an approximate value; isomer is qualified as positively identified, but an estimated quantity because quantitation based on the theoretical ratio for samples, Possible Lab contamination of samples (TASAC)

Jq = Result is < the RL but > or = to the MDL and the concentration is an approximate value; The isomer is qualified as positively identified, but at an estimated quantity because the quantitation is based on the theoretical ratio for these samples

JqB = Result is < the RL but > or = to the MDL and the conc is an approximate value; isomer is qualified as positively identified, but an estimated quantity because quantitation based on the theoretical ratio for samples, Possible Lab contamination of samples (TASAC)

U\* = Undetected; LCS or LCSD exceeds the control limits.

**Qualifiers - Inorganic:**

G = Estimate is greater than value shown.

**Table 6**  
**Rinsate & Equipment Blank Analytical Data Summary Table**  
**Former Reid Hospital Site**  
**Richmond, Indiana**

	RB-1	RB-2	EB-1	EB-2	EB-1
	June 16, 2016	June 16, 2016	June 16, 2016	June 16, 2016	June 21, 2016
	Rinse Blank	Rinse Blank	Equipment Blank	Equipment Blank	Equipment Blank
Analyte	Unit				

J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.  
 U G = Undetected; Estimate is greater than value shown (TASL)

# *Appendices*

*Appendix A*  
*Borings Logs & Monitoring Well*  
*Construction Diagrams*





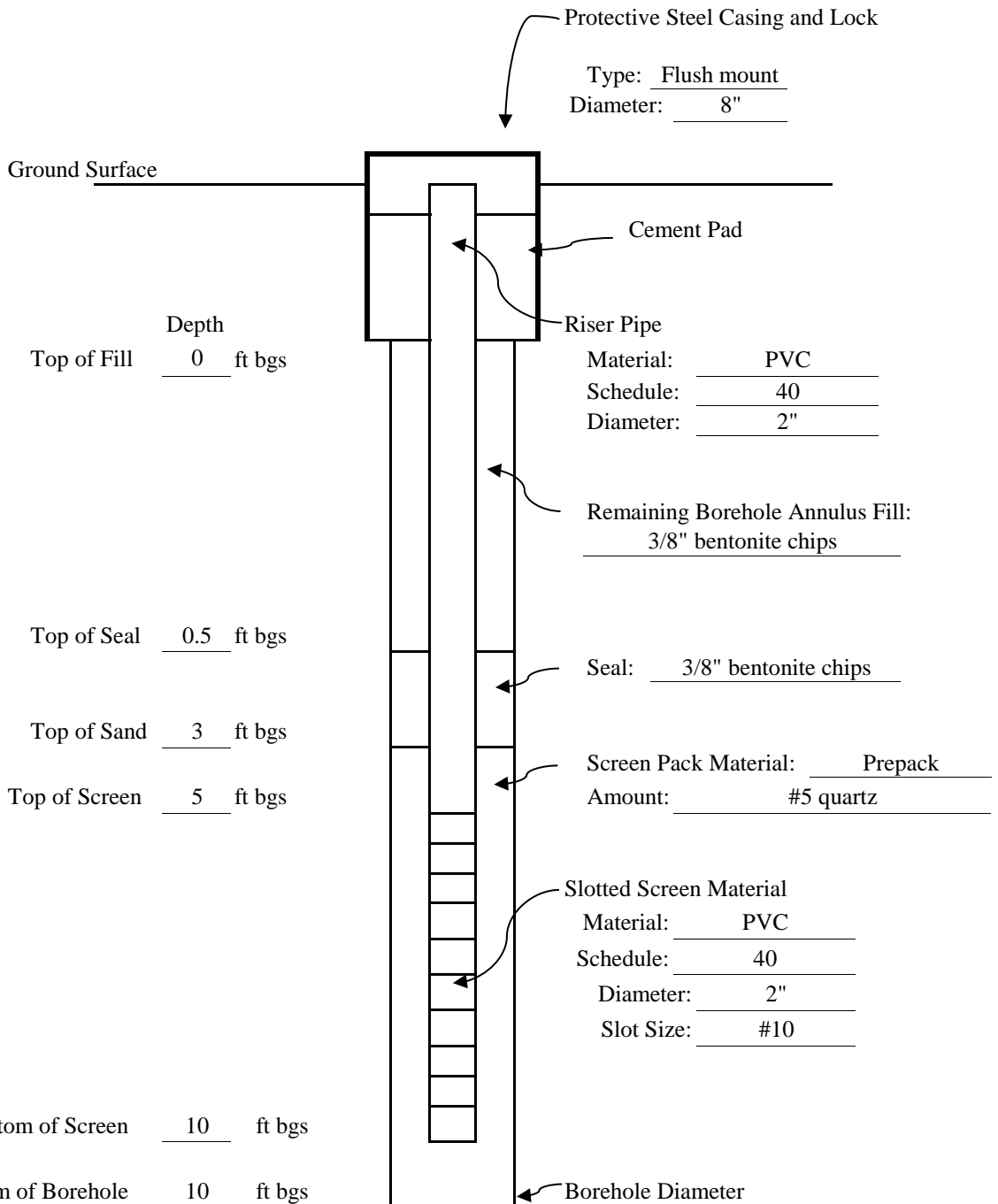
**ERM, Inc.**  
 8425 Woodfield Crossing Blvd, Ste 560-W  
 Indianapolis, Indiana 46240  
 (317) 706-2000

# Well Construction Diagram

Well ID: **MW-1**

**Client:** Reid Health  
**Project:** Site Investigation  
**Proj. No.:** 356198  
**ERM Geologist:** A. Taylor  
**Drilling Company:** EnviroCore  
**Driller:** Kenny Caustoff  
**Drilling Method:** Geoprobe

**Date Installed:** 6/16/2016  
**Date Developed:** 6/17/2016  
**Development Method:** Surge block/pump  
**Water Removed During Development:** ~2.0 gal  
**Static Water Level Depth/Elevation:** 958.927 ft amsl  
**Top of Casing Elevation:** 966.417 ft amsl  
**Ground Elevation:** 966.765 ft amsl



ft amsl = feet above mean sea level, ft bgs = feet below ground surface



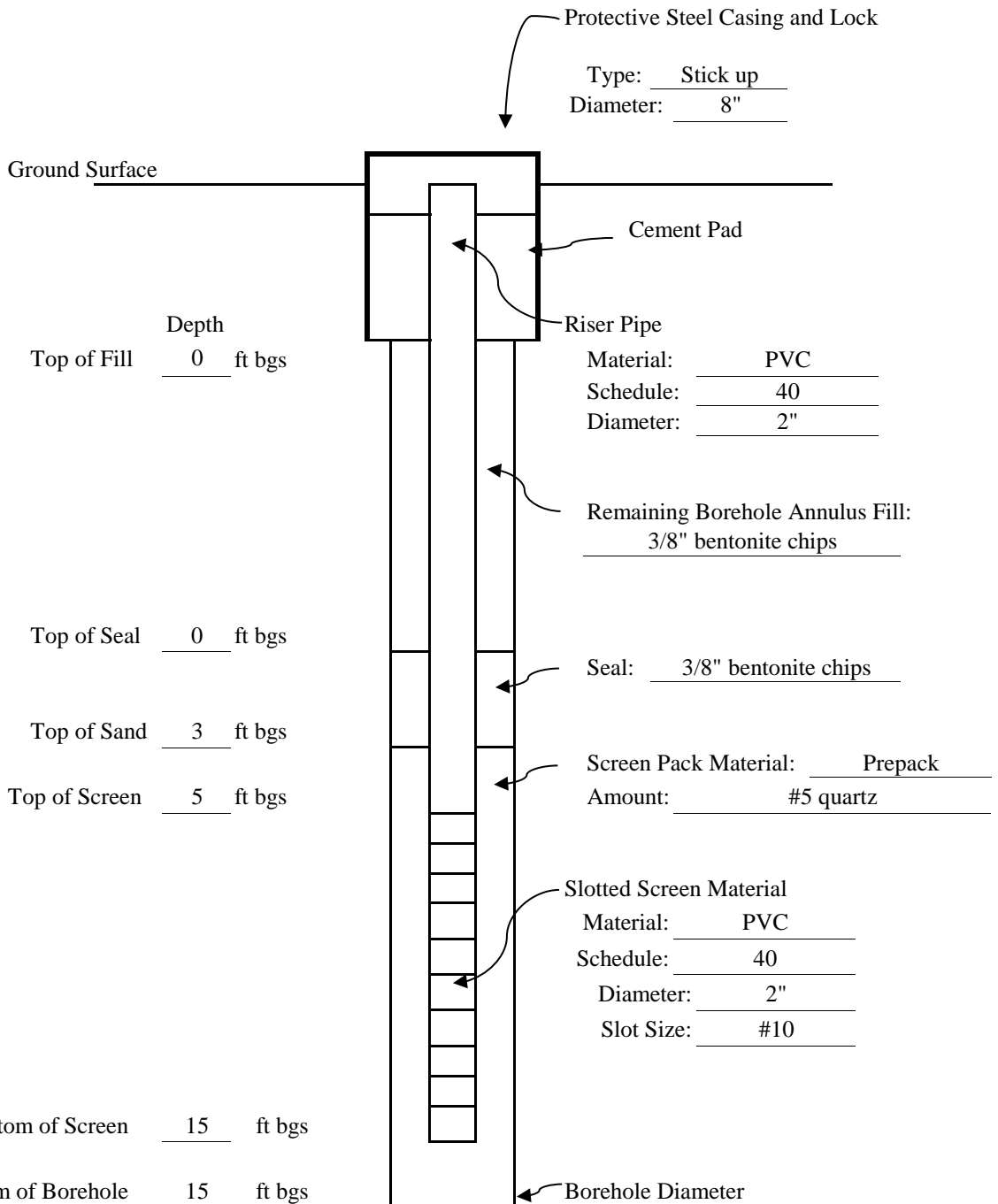
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 Indianapolis, Indiana 46240  
 (317) 706-2000

# Well Construction Diagram

Well ID: **MW-2**

**Client:** Reid Health  
**Project:** Site Investigation  
**Proj. No.:** 356198  
**ERM Geologist:** A. Taylor  
**Drilling Company:** EnviroCore  
**Driller:** Kenny Caustoff  
**Drilling Method:** Geoprobe

**Date Installed:** 6/16/2016  
**Date Developed:** 6/17/2016  
**Development Method:** Surge block/pump  
**Water Removed During Development:** ~7.0 gal  
**Static Water Level Depth/Elevation:** 912.408 ft-amsl  
**Top of Casing Elevation:** 922.828 ft-amsl  
**Ground Elevation:** 919.951 ft-amsl



ft amsl = feet above mean sea level, ft bgs = feet below ground surface



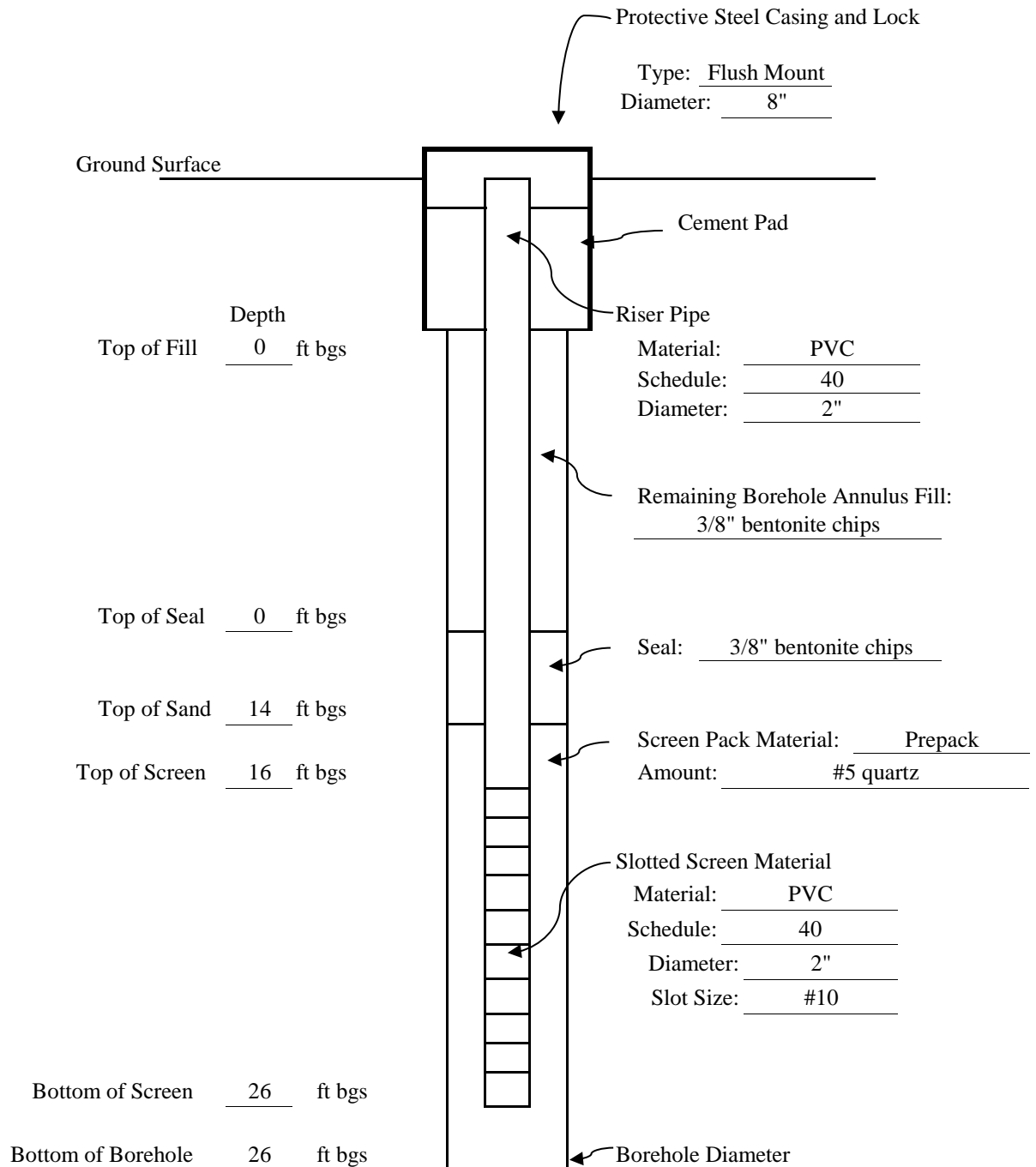
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 Indianapolis, Indiana 46240  
 (317) 706-2000

# Well Construction Diagram

Well ID: MW-3

Client: Reid Health  
 Project: Site Investigation  
 Proj. No.: 356198  
 ERM Geologist: A. Taylor  
 Drilling Company: EnviroCore  
 Driller: Kenny Caustoff  
 Drilling Method: Geoprobe

Date Installed: 6/16/2016  
 Date Developed: 6/17/2016  
 Development Method: Surge block/pump  
 Water Removed During Development: ~14.0 gal  
 Static Water Level Depth/Elevation: 919.305 ft-amsl  
 Top of Casing Elevation: 928.185 ft-amsl  
 Ground Elevation: 923.762 ft-amsl



ft amsl = feet above mean sea level, ft bgs = feet below ground surface



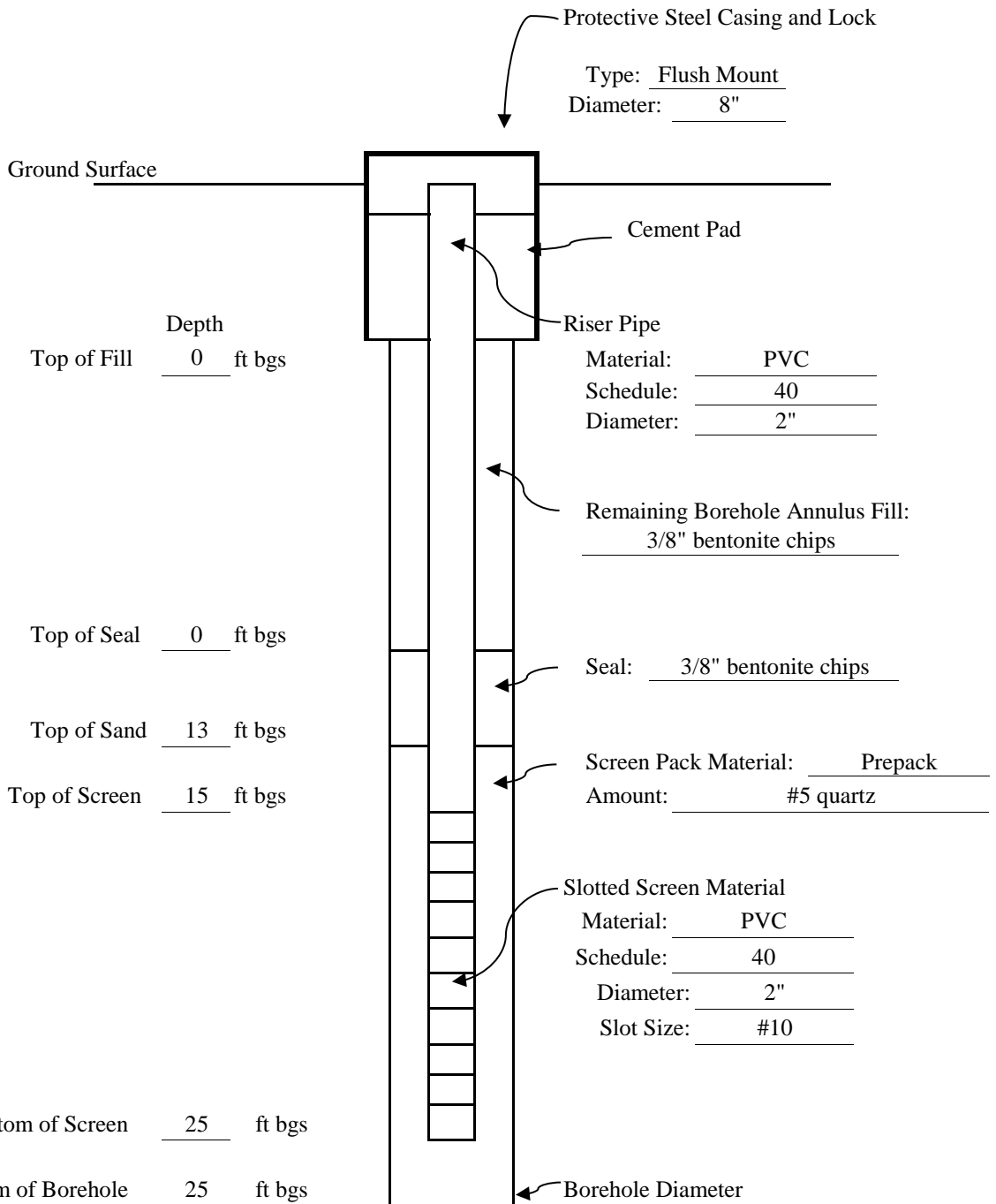
**ERM, Inc.**  
 8425 Woodfield Crossing Blvd, Ste 560-W  
 Indianapolis, Indiana 46240  
 (317) 706-2000

# Well Construction Diagram

Well ID: **MW-4**

**Client:** Reid Health  
**Project:** Site Investigation  
**Proj. No.:** 356198  
**ERM Geologist:** A. Taylor  
**Drilling Company:** EnviroCore  
**Driller:** Kenny Caustoff  
**Drilling Method:** Geoprobe

**Date Installed:** 6/16/2016  
**Date Developed:** 6/17/2016  
**Development Method:** Surge block/pump  
**Water Removed During Development:** ~1.5 gal  
**Static Water Level Depth/Elevation:** 917.32 ft-amsl  
**Top of Casing Elevation:** 939.56 ft-amsl  
**Ground Elevation:** 940.056 ft-amsl



ft amsl = feet above mean sea level, ft bgs = feet below ground surface



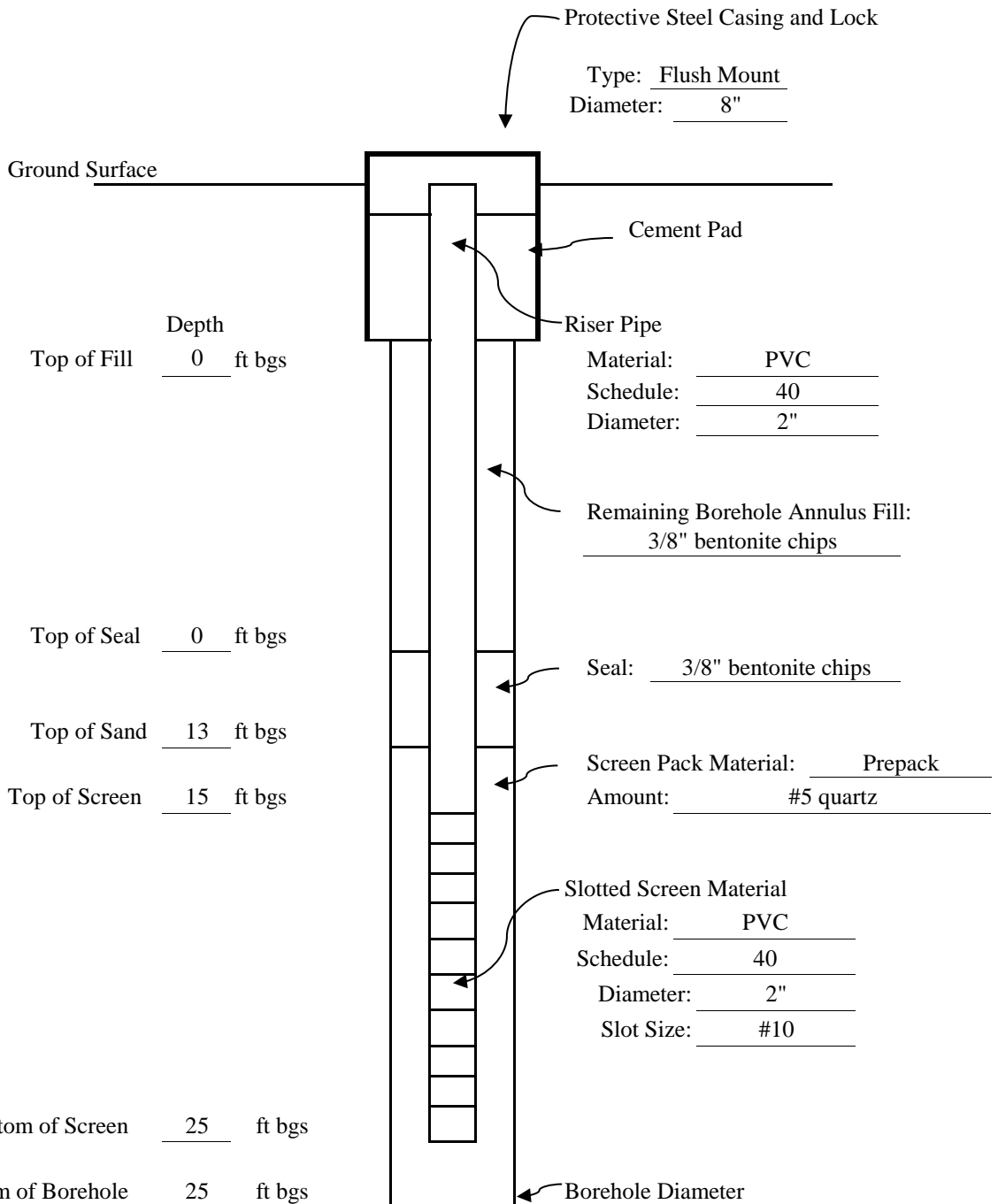
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 Indianapolis, Indiana 46240  
 (317) 706-2000

# Well Construction Diagram

Well ID: MW-5

Client: Reid Health  
 Project: Site Investigation  
 Proj. No.: 356198  
 ERM Geologist: A. Taylor  
 Drilling Company: EnviroCore  
 Driller: Kenny Caustoff  
 Drilling Method: Geoprobe

Date Installed: 6/16/2016  
 Date Developed: 6/17/2016  
 Development Method: Surge block/pump  
 Water Removed During Development: ~7.5 gal  
 Static Water Level Depth/Elevation: 904.168 ft-amsl  
 Top of Casing Elevation: 920.978 ft-amsl  
 Ground Elevation: 920.956 ft-amsl



ft amsl = feet above mean sea level, ft bgs = feet below ground surface



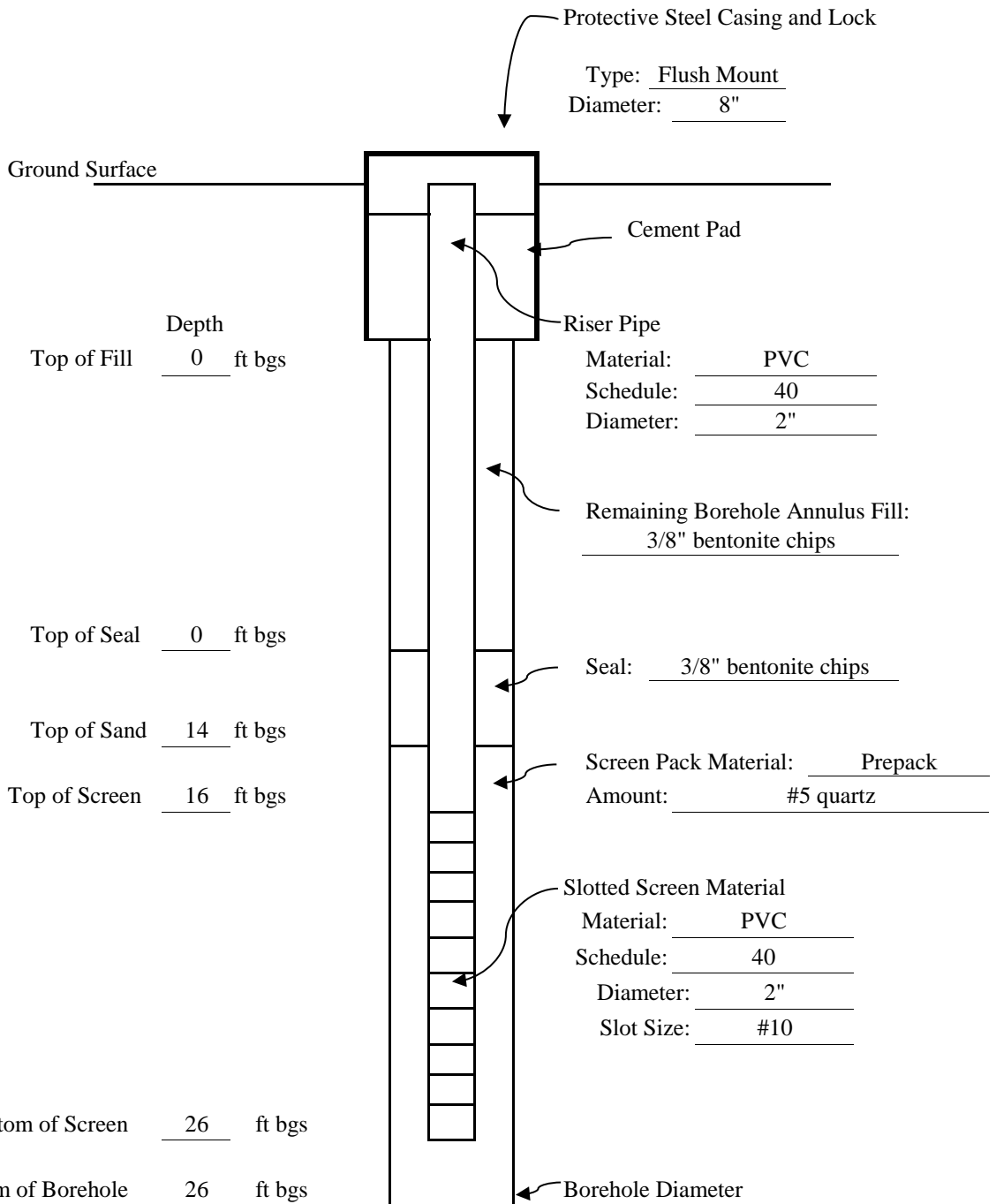
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 Indianapolis, Indiana 46240  
 (317) 706-2000

# Well Construction Diagram

Well ID: MW-6

Client: Reid Health  
 Project: Site Investigation  
 Proj. No.: 356198  
 ERM Geologist: A. Taylor  
 Drilling Company: EnviroCore  
 Driller: Kenny Caustoff  
 Drilling Method: Geoprobe

Date Installed: 6/16/2016  
 Date Developed: 6/17/2016  
 Development Method: Surge block/pump  
 Water Removed During Development: ~13.0 gal  
 Static Water Level Depth/Elevation: 906.962 ft-amsl  
 Top of Casing Elevation: 923.442 ft-amsl  
 Ground Elevation: 923.762 ft-amsl



ft amsl = feet above mean sea level, ft bgs = feet below ground surface



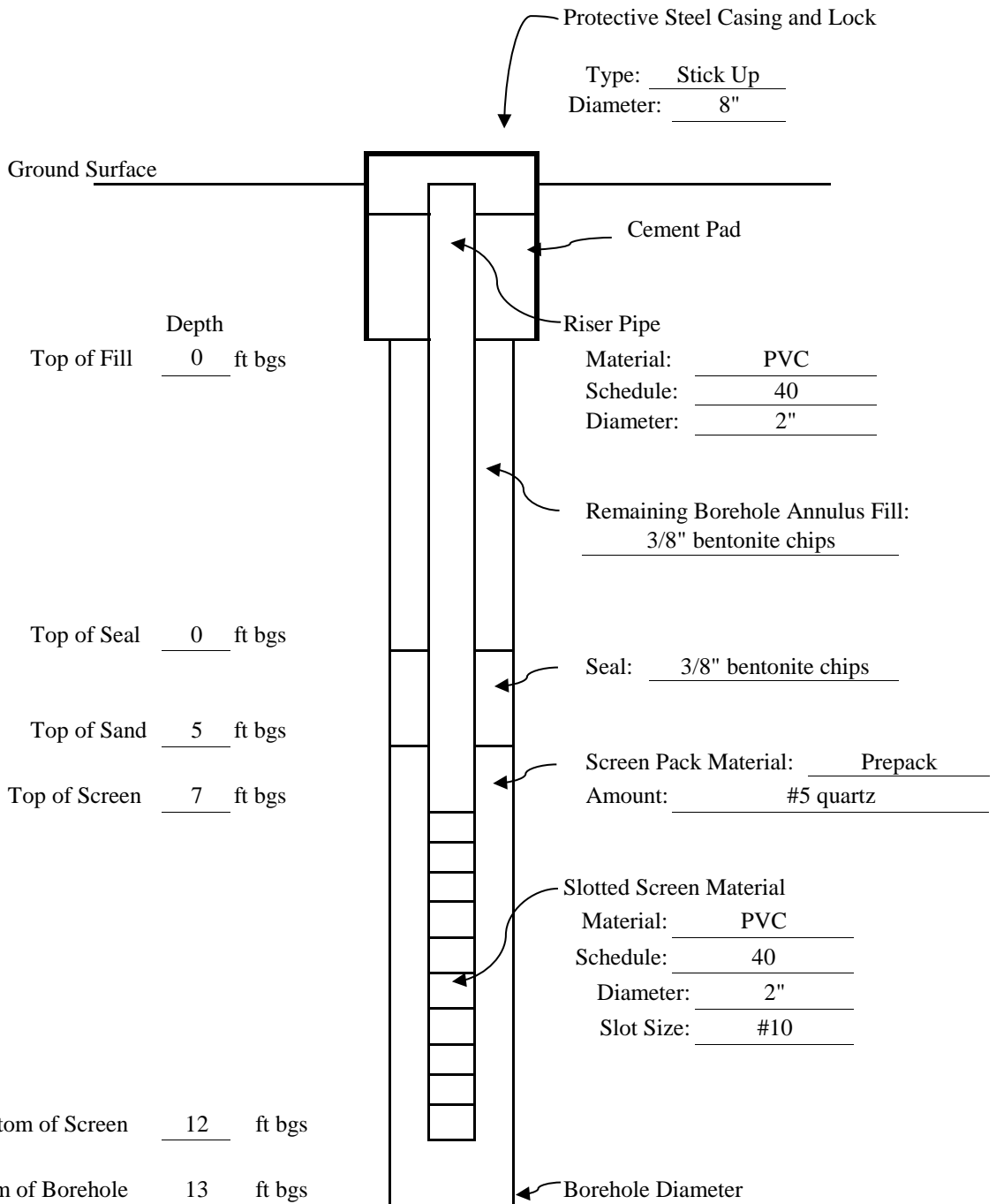
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 Indianapolis, Indiana 46240  
 (317) 706-2000

# Well Construction Diagram

Well ID: MW-7

Client: Reid Health  
 Project: Site Investigation  
 Proj. No.: 356198  
 ERM Geologist: A. Taylor  
 Drilling Company: EnviroCore  
 Driller: Kenny Caustoff  
 Drilling Method: Geoprobe

Date Installed: 6/16/2016  
 Date Developed: 6/17/2016  
 Development Method: Surge block/pump  
 Water Removed During Development: ~13.0 gal  
 Static Water Level Depth/Elevation: 906.148 ft-amsl  
 Top of Casing Elevation: 917.008 ft-amsl  
 Ground Elevation: 913.202 ft-amsl



ft amsl = feet above mean sea level, ft bgs = feet below ground surface



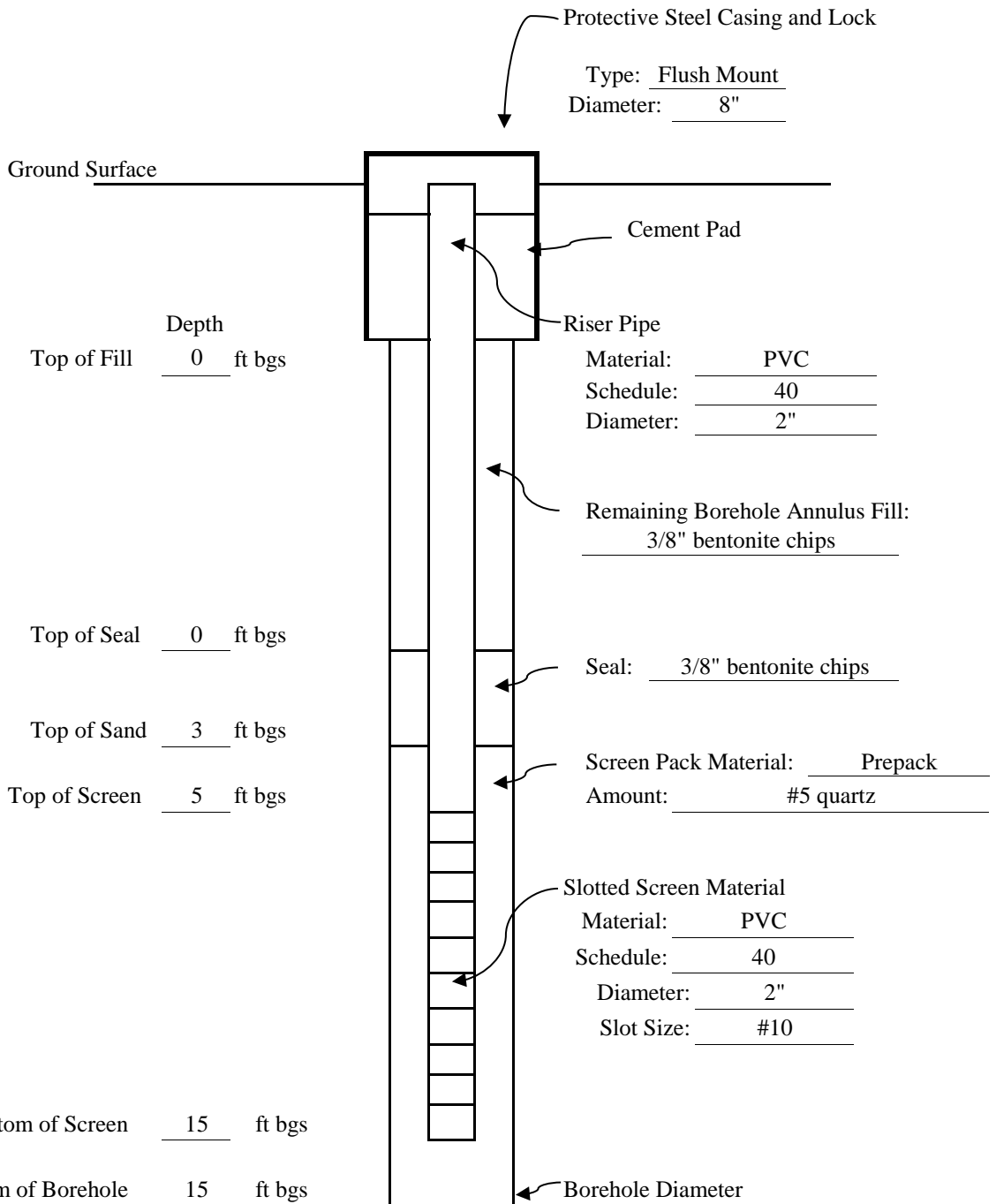
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 Indianapolis, Indiana 46240  
 (317) 706-2000

# Well Construction Diagram

Well ID: MW-8

Client: Reid Health  
 Project: Site Investigation  
 Proj. No.: 356198  
 ERM Geologist: A. Taylor  
 Drilling Company: EnviroCore  
 Driller: Kenny Caustoff  
 Drilling Method: Geoprobe

Date Installed: 6/16/2016  
 Date Developed: 6/17/2016  
 Development Method: Surge block/pump  
 Water Removed During Development: ~7.5 gal  
 Static Water Level Depth/Elevation: 908.885 ft-amsl  
 Top of Casing Elevation: 914.975 ft-amsl  
 Ground Elevation: 915.290 ft-amsl



ft amsl = feet above mean sea level, ft bgs = feet below ground surface





ERM, Inc.  
 8425 Woodfield Crossing Blvd, Suite 560-W  
 Indianapolis, Indiana, 46240  
 (317) 706-2000

Soil Boring Log  
 Boring No: SB-16/MW-1  
 Page 1 of 1

**Date:** 6/15/2016      **Proj. No.:** 356198      **Project:** Site Investigation  
**Client:** Reid Health      **Location:** Richmond, IN  
**Drilling Company:** EnviroCore      **Driller:** K. Caustoff  
**Logged By:** C. Burrows      **Drilling Method:** Geoprobe  
**Surface Elevation:** 966.765 ft-amsl      **Top of Casing Elevation:**  
**Total Depth:** 12 ft-bgs      **Diameter:** 3.25"      **Sampling Method:** Dual tube  
**Comments:** *Converted to MW-1*  
*Northing: 1675666.053    Easting: 546511.53*

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-6" <b>Asphalt</b>
1.0	0.5/3.1	SB-16 (0-2)		6"-1' <b>Sub-base</b>
2.0			100%	1-4' silty <b>Sand</b> , likely fill, fine grained, well sorted, dry, no stains/odors, 10 YR 5/6 yellowish brown
3.0	0.8/2.8			
4.0				4-8' gravelly sandy <b>Clay</b> , gravel up to 1.5", crumbly, dry, slightly firm, some iron staining, no odors, trace fill fragments (brick), 10 YR 5/6 yellowish brown
5.0	1.0/2.7			
6.0			75%	
7.0	0.9/3.0			
8.0				8-10' <b>Sand</b> , some gravel up to 0.5", saturated, fine-medium grained, moderately sorted, no stains/odors, 10 YR 5/6 yellowish brown
9.0	0.7/1.5	SB-16 (8-12)		
10.0			75%	10-12' silty <b>Clay</b> , trace gravel up to 1", dry-slightly moist, very firm-sstiff, crumbly, no stains/odors, 10 YR 4/4 dark yellowish brown
11.0	0.9/1.0			
12.0				End boring @ 12 ft-bgs
13.0				
14.0				
15.0				
16.0				
17.0				
18.0				
19.0				
20.0				
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-17  
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Date: 6/15/2016      Proj. No.: 356198      Project: Site Investigation  
 Client: Reid Health      Location: Richmond, IN  
 Drilling Company: EnviroCore      Driller: K. Caustoff  
 Logged By: C. Burrows      Drilling Method: Geoprobe  
 Surface Elevation: 920.634 ft-amsl      Top of Casing Elevation:  
 Total Depth: 20 ft-bgs      Diameter: 3.25"      Sampling Method: Dual tube  
 Comments:

Northing: 1676049.791      Easting: 547901.662

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-8' gravelly <b>Clay</b> Fill, trace glass and debris, soft, non-plastic, cohesive, no stains/odors, 10 YR 4/3 dark yellowish brown. Concrete layer ~2'
1.0	0.1/0.3	1000 SB-17 (0-2) +MS/MSD +Dup	70%	
2.0				
3.0	0.3/0.7			
4.0				
5.0	0.2/1.5			
6.0			60%	8-11' silty <b>Sand</b> , fine-grained, well sorted, very moist, no stains/odors, 10 YR 4/1 dark gray
7.0	0.1/0.8	1155 SB-17 (6-8') for PAHs & metals		
8.0				
9.0	0.1/0.9		80%	
10.0				
11.0	0.4/1.1		80%	
12.0				
13.0	0.2/1.0			
14.0				
15.0	0.32/0.5			16-19' gravelly <b>Clay</b> , hard, slightly moist, plastic, cohesive, no stains/odors, gravel is up to ~0.25" and subround, 10 YR 4/1 dark gray
16.0			100%	
17.0	0.1/0.5	1010 SB-17 (16-20')		
18.0				19-20' silty <b>Clay</b> , trace gravel up to ~0.25", very hard, slightly moist, plastic, cohesive, no stains/odors, 10 YR 4/1 dark gray
19.0	0.1/0.8			
20.0				End of boring @ 20 ft-bgs
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log  
 Boring No: SB-18/MW-2  
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Date: 6/15/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 919.951 ft-amsl Top of Casing Elevation: \_\_\_\_\_  
 Total Depth: 20 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: Converted to MW-2  
 Northing: 1675877.609 Easting: 547876.689

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	0.5/0.7	1105 SB-18 (0-2')	100%	0-7.5' gravelly <b>Clay</b> Fill with bricks and cinders, slightly moist, slight odor, gravel is up to ~1", 10 YR 4/3 dark yellowish brown.
2.0				
3.0	1.5/3.8			
4.0				
5.0	2.3/4.1			
6.0				
7.0	1.6/8.9	1145 SB-18 (6-8') for PAHs & metals	85%	7.5-10' silty <b>Sand</b> , fine-grained, well sorted, very moist, no stains, slight odor, 10 YR 4/1 dark gray
8.0				
9.0	1.4/12.1			
10.0			75%	10-14' sandy <b>Gravel</b> up to ~0.75", subangular, poorly sorted, saturated, no stains, slight odor, 10 YR 4/1 dark gray
11.0	0.8/8.9			
12.0				
13.0	0.6/11.4			
14.0			100%	14-19' gravelly <b>Clay</b> , hard, slightly moist, slightly plastic, cohesive, no stains/odors, 10 YR 4/1 dark gray
15.0	0.6/6.8			
16.0				
17.0	1.0/0.1	1140 SB-18 (16-20') for gamma spec	100%	19-20' silty <b>Clay</b> , trace gravel up to ~0.25", very hard, slightly moist, plastic, cohesive, no stains/odors, 10 YR 4/1 dark gray
18.0				
19.0	1.1/10.3			
20.0				End of boring @ 20 ft-bgs
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-19  
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Date: 6/15/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 920.327 ft-amsl Top of Casing Elevation: \_\_\_\_\_  
 Total Depth: 16 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: \_\_\_\_\_

Northing: 1675926.331 Easting: 547930.535

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-8' sandy gravelly <b>Clay</b> fill, some bricks, slightly moist, no stains/odors, 10 YR 4/4 dark yellowish brown. Layer of asphalt/concrete ~1.5-2'
1.0	1.1/1.5	0915 SB-19 (0-2')	80%	
2.0				
3.0	0.5/2.6			
4.0				
5.0	0.2/1.1			
6.0				
7.0	0.6/1.6	1210 SB-19 (6-8') for PAHs & metals	25%	
8.0				8-11' silty <b>Sand</b> , fine grained, well sorted, very moist, no stains/odors, 10 YR 4/1 dark gray
9.0	0.8/12.3			
10.0		0930 SB-19 (8-12')	75%	
11.0	0.5/8.9			11-15' sandy <b>Gravel</b> up to ~1", subangular, poorly sorted, saturated, no stains/odors
12.0				
13.0	1.2/5.1			
14.0			95%	
15.0	0.7/0.8			15-16' silty <b>Clay</b> , slightly moist, plastic, firm, cohesive, no stains/odors, 10 YR 4/1 dark gray
16.0				End of boring @ 16 ft-bgs
17.0				
18.0				
19.0				
20.0				
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-20/MW-3  
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Date: 6/15/2016      Proj. No.: 356198      Project: Site Investigation  
 Client: Reid Health      Location: Richmond, IN  
 Drilling Company: EnviroCore      Driller: K. Caustoff  
 Logged By: C. Burrows      Drilling Method: Geoprobe  
 Surface Elevation: 928.974 ft-amsl      Top of Casing Elevation:  
 Total Depth: 40 ft-bgs      Diameter: 3.25"      Sampling Method: Dual tube  
 Comments: Converted to MW-3  
 Northing: 1675172.186      Easting: 546855.011

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-3" Asphalt
1.0	3.2/6.6		100%	3"-8" sandy gravelly Fill with some bricks, no stains, faint odor, dry-slightly moist ~6', 10 YR 4/3 dark yellowish brown
2.0				
3.0	0.1/0.5			
4.0				
5.0	0.4/2.1			
6.0			100%	
7.0	0.7/1.5			
8.0				8-16' sandy gravelly Clay Fill, no stains, faint odor, slightly moist, non-plastic, moderately cohesive, 10 YR 4/3 dark yellowish brown
9.0	1.0/1.0		10%	
10.0				
11.0	1.1/0.9			
12.0				
13.0	0.9/1.3		90%	
14.0				
15.0	0.7/2.1			
16.0				No Recovery
17.0	NR		0%	
18.0				
19.0	NR			
20.0				20-24' silty Sand, saturated, fine grained, well sorted, no stains/odors, 10 YR 4/4 dark yellowish brown
21.0	6.1/0		100%	
22.0				
23.0	5.2/0			
24.0				24-26.5' sandy Gravel up to ~1", saturated, poorly sorted, 10 YR 5/6 yellowish brown
25.0	9.1/18.2		100%	
26.0				
27.0	8.1/9.1			26.5-28' silty Clay, trace gravel up to ~0.25", slightly moist, very firm, moderately plastic, cohesive, no stains, no odors, 10 YR 4/1 dark gray
28.0				End boring @ 28 ft-bgs
29.0				
30.0				



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Soil Boring Log

Boring No: SB-21/MW-4  
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Date: 6/15/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 940.138 ft-amsl Top of Casing Elevation:  
 Total Depth: 40 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: Converted to MW-4  
 Northing: 1675379.545 Easting: 547369.639

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-9" Asphalt
1.0	12.7/3.5			9"-1.5' asphalt sub-base
2.0			100%	1.5-12' gravelly Sand fill, some clay, trace glass and brick fragments, gravel up to 1.5", dry, no stains/odors, 10 YR 3/1 dark gray transitions to 10 YR 5/6 yellowish brown ~6'
3.0	8.9/2.1			
4.0				
5.0	6.1/1.5			
6.0			25%	
7.0	4.3/3.1			
8.0				
9.0	2.7/2.6			
10.0			20%	
11.0	1.5/3.2			
12.0				
13.0	1.7/4.8			12-19' sandy gravelly Clay, gravel up to 1", soft, moderately plastic, moist, no stains/odors, 10 YR 5/6 yellowish brown transitions to 10 YR 3/1 dark gray
14.0			75%	
15.0	1.0/2.5			
16.0				
17.0	0.5/1.5			
18.0			75%	
19.0	0.1/1.0			19-24' sandy Silt, trace gravel, soft, crumbly, very moist, gravel up to 1", no stains/odors, 10 YR 5/2 grayish brown
20.0				
21.0	0.6/0.7			
22.0			90%	
23.0	0.2/0.8			
24.0				
25.0	1.1/1.3			24-32.5 sandy Clay, soft-slightly firm, trace gravel, moist, plastic, no stains/odors, 10 YR 4/4 dark yellowish brown
26.0			100%	
27.0	1.3/1.5			
28.0				
29.0	1.2/1.7			
30.0			100%	



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Soil Boring Log

Boring No: SB-21  
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**Date:** 6/15/2016      **Proj. No.:** 315592      **Project:** Site Investigation  
**Client:** Reid Hospital      **Location:** Richmond, IN  
**Drilling Company:** EnvirCore      **Driller:** K. Caustoff  
**Logged By:** A. Taylor      **Drilling Method:** Geoprobe  
**Surface Elevation:**      **Top of Casing Elevation:**  
**Total Depth:** 40 ft-bgs      **Diameter:** 3.25"      **Sampling Method:** Dual-tube  
**Comments:**

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
31.0				
32.0				
33.0	0.9/1.0		100%	32.5-40' silty <b>Clay</b> , trace gravel up to 1", very firm-stiff, crumbly, dry-slightly moist, no stains/odors, 10 YR 3/1 very dark gray
34.0				
35.0	0.4/1.2			
36.0				
37.0	0.2/1.6		100%	
38.0				
39.0	0.1/1.0			
40.0				End of boring @ 40'
41.0				
42.0				
43.0				
44.0				
45.0				
46.0				
47.0				
48.0				
49.0				
50.0				
51.0				
52.0				
53.0				
54.0				
55.0				
56.0				
57.0				
58.0				
59.0				



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Soil Boring Log

Boring No: SB-22/MW-5  
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Date: 6/14/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: A. Taylor, C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 920.956 ft-amsl Top of Casing Elevation:  
 Total Depth: 28 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: Converted to MW-5  
 Northing: 1674487.108 Easting: 546578.553

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-6" <b>Topsoil</b> , organic material, silty clay
1.0	1.5/1.0	1450 SB-22 (0-2) + MS/MSD +Dup	75%	6"-10' <b>Fill</b> material, brick fragments, gravelly sandy clay matrix, slightly moist, soft, moderately plastic, 10 YR 4/3 dark yellowish brown
2.0				
3.0	0.6/0.5			
4.0				
5.0	0.7/1.2			
6.0			80%	
7.0	0.5/0.5			
8.0				
9.0	0.1/0.3			
10.0			80%	
11.0	1.3/112			10-20' clayey <b>Silt</b> , trace gravel, soft-very soft, non-platic, moist, no stains, no odors, 10 YR 5/6 yellowish brown @ 16'
12.0				
13.0	1.3/12.9			
14.0			75%	
15.0	0.9/1.5			
16.0				
17.0	1.5/2.6			
18.0		1510 SB-22 (16-20)	80%	
19.0	7.3/1.6			
20.0				20-24' sandy <b>Gravel</b> , saturated, gravel up to 1.5", medium-coarse grained, poorly sorted, no stains, no odors, 10 YR 5/4 yellowish brown
21.0	6.1/0.8			
22.0			60%	
23.0	1.5/1			
24.0				24-28' silty <b>Clay</b> , very firm, moist-slightly moist, trace gravel up to ~1", no stains/odors, 10 YR 3/1 dark gray
25.0	1.1/0.9			
26.0			100%	
27.0	0.8/1.7			
28.0				End boring @ 28 ft-bgs
29.0				
30.0				





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Soil Boring Log

Boring No: SB-23/MW-6  
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Date: 6/14/2016      Proj. No.: 356198      Project: Site Investigation  
 Client: Reid Health      Location: Richmond, IN  
 Drilling Company: EnviroCore      Driller: K. Caustoff  
 Logged By: C. Burrows      Drilling Method: Geoprobe  
 Surface Elevation: 923.762 ft-amsl      Top of Casing Elevation:  
 Total Depth: 28 ft-bgs      Diameter: 3.25"      Sampling Method: Dual tube  
 Comments: Converted to MW-6  
 Northing: 1674900.54      Easting: 546807.99

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-8" Asphalt
1.0	3.1/0	0935 SB-23 (1-2)	100%	8"-2' gravelly asphalt Sub-base
2.0				
3.0	2.4/0			2-5' sandy Clay, some gravel up to ~1", clay is soft, slightly moist, non-plastic, slightly cohesive, no stains, faint odor, 10 YR 3/2 very dark grayish brown
4.0				
5.0				
6.0	3.8/0		100%	5-8' sandy gravelly Clay Fill with bricks, glass, cinders, slightly moist, no stains/odors, 10 YR 3/2 very dark grayish brown
7.0				
8.0				
9.0	4.7/1.2		75%	8-14' sandy Clay, some gravel up to ~1", clay is soft, moist, plastic, cohesive, no stains/odors, 10 YR 4/4 dark yellowish brown
10.0				
11.0	5.2/2.6			
12.0				
13.0	2.5/0	1030 SB-23 (12-16)	75%	
14.0				
15.0	2.2/0			14-18' silty Clay, trace gravel up to ~0.5", clay is soft, slightly moist, plastic, cohesive, no stains, slight odor, 10 YR 3/2 very dark grayish brown. Increasing gravel content with depth.
16.0				
17.0	2.8/0		100%	
18.0				
19.0	1.5/0			18-27' sandy Gravel, some clay. Gravel is up to ~0.75", subrounded, saturated, no stains/odors, 10 YR 4/1 dark gray
20.0				
21.0	8.3/5.1		80%	
22.0				
23.0	9.9/6.2			
24.0				
25.0	14.8/2.1		20%	
26.0				
27.0	13.2/3.9			27-28' Clay, some gravel up to ~1", hard, dry, non-plastic, non-cohesive, no stains/odors, 10 YR 3/2 very dark grayish brown.
28.0				End boring at 28 ft-bgs
29.0				
30.0				



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Soil Boring Log

Boring No: SB-24/MW-7  
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Date: 6/14/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 913.202 ft-amsl Top of Casing Elevation:  
 Total Depth: 19 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: Converted to MW-7  
 Northing: 1674955.43 Easting: 547508.644

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	0.1/0.2	1610 SB-24 (0-2')	100%	0-4.5' sandy gravelly Clay Fill, slightly moist, gravel up to 0.5", sub-rounded, cohesive, non-plastic, no stains/odors, 10 YR 4/3 brown. Slight odor and glass fragments ~1.5'. Increased silt content 3-4.5'
2.0				
3.0	12.5/8.9			
4.0				
5.0	6.7/5.1			4.5-5' Sand, well sorted, likely fill, moist, no stains/odors, fine-medium grained, 10 YR 4/3 dark yellowish brown
6.0			100%	5-12' sandy Gravel, trace fill material (glass and brick fragments) from 5-8', gravel up to ~1", saturated, no stains/odors, poorly sorted, medium-coarse grained, 10 YR 4/4 dark yellowish brown
7.0	3.1/0.1			
8.0				
9.0	7.2/0.2		40%	
10.0				
11.0	8.6/15.2			
12.0				
13.0	9.3/11	1635 SB-24 (12-16')	100%	12-19' silty Clay, firm-very firm, slightly moist, moisture content decreases with depth, trace gravel, moderately plastic, no stains/odors, 10 YR 4/1 dark gray
14.0				
15.0	7.5/10			
16.0				
17.0	6.1/11		110%	
18.0				
19.0	4.3/33			
End boring @ 19 ft-bgs				
20.0				
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-25/MW-8  
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Date: 6/14/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 915.29 ft-amsl Top of Casing Elevation:  
 Total Depth: 16 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: Converted to MW-8  
 Northing: 1675380.755 Easting: 547930.767

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-6" Asphalt
1.0	0.5/0.6	1840 SB-25 (0-2')		6"-1' Asphalt sub-base
2.0			100%	1-8' gravelly Sand, some clay, gravel up to ~2", moderately well sorted, medium grained, dry-slightly moist, slightly cohesive, no stains/odors, 10 YR 5/6 yellowish brown, increasing gravel content with depth
3.0	1.3/0.9			
4.0				
5.0	1.0/1.1			
6.0			50%	
7.0	0.8/1.2			
8.0				8-11.5' sandy Gravel, saturated, medium-coarse grained, poorly sorted, no stains/odors, 10 YR 5/6 yellowish brown
9.0	1.5/3.8		75%	
10.0				
11.0	2.1/7.5			
12.0				11.5-16' silty Clay, trace gravel up to 1", slightly moist, very firm, moderately plastic, no stains/odors, 10 YR 3/1 dark gray
13.0	1.5/6.1	1845 SB-25 (12-16')	100%	
14.0				
15.0	0.8/3.9			
16.0				End of boring @ 16 ft-bgs
17.0				
18.0				
19.0				
20.0				
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-26  
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**Date:** 6/13/2016      **Proj. No.:** 356198      **Project:** Site Investigation  
**Client:** Reid Health      **Location:** Richmond, IN  
**Drilling Company:** EnviroCore      **Driller:** K. Caustoff  
**Logged By:** C. Burrows      **Drilling Method:** Geoprobe  
**Surface Elevation:** 927.787 ft-amsl      **Top of Casing Elevation:**  
**Total Depth:** 20 ft-bgs      **Diameter:** 3.25"      **Sampling Method:** Dual tube  
**Comments:**  
 Northing: 1675085.655      Easting: 546607.706

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-11' sandy <b>Clay</b> Fill, some gravel, brick, and organic material, slightly moist, clay is soft, slightly plastic, cohesive, no stains/odors, 10 YR 4/6 dark yellowish brown. Less moisture and organic material, moderate odor with depth.
1.0	0.5/0.3	1245 SB-26 (0-2)	100%	
2.0				
3.0	0.8/1.7			
4.0				
5.0				
6.0	1.1/3.8		100%	
7.0				
8.0				
9.0	1.2/25		100%	
10.0				11-14' sandy <b>Gravel</b> , some clay, moist, gravel is subround, poorly sorted, no stains, moderate odor, 10 YR 4/1 dark gray
11.0	6.5/10			
12.0				14-15.5" silty <b>Clay</b> , slightly moist, firm, plastic, cohesive, no stains slight odor, 10 YR 2/2 very dark brown
13.0	2.5/87	1325 SB-26 (12-16)	0%	
14.0				
15.0	6.5/273			15.5-18.5" sandy <b>Gravel</b> , up to ~1", trace clay, saturated, subrounded, poorly sorted, no stains/odors 10 YR 5/6 yellowish brown with depth
16.0				
17.0	2.9/16		100%	18.5-20' silty <b>Clay</b> , trace gravel up to ~0.25", very firm, slightly moist, slightly plastic, cohesive, no stains/odors, 10 YR 3/1 very dark gray
18.0				
19.0	0.9/1.1			
20.0				End of boring @ 20 ft-bgs
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-27  
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**Date:** 6/13/2016 **Proj. No.:** 356198 **Project:** Site Investigation  
**Client:** Reid Health **Location:** Richmond, IN  
**Drilling Company:** EnviroCore **Driller:** K. Caustoff  
**Logged By:** C. Burrows **Drilling Method:** Geoprobe  
**Surface Elevation:** 920.287 ft-amsl **Top of Casing Elevation:**  
**Total Depth:** 24 ft-bgs **Diameter:** 3.25" **Sampling Method:** Dual tube  
**Comments:**

Northing: 1675119.096 Easting: 547578.931

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-6" Asphalt
1.0	0.8/0.1	1720 SB-27 (0-2)	100%	6"-1' Asphalt sub-base
2.0				1-10' gravelly sandy Clay fill, trace brick and glass fragments, slightly moist, slightly plastic, no stains/odors, 10 YR 5/4 yellowish brown transitions to 10 YR 4/1 dark gray ~6'
3.0	0.6/0.2			
4.0			100%	
5.0	0.5/0.3			
6.0				
7.0	0.9/0.1		40%	
8.0				
9.0	2.1/23.4		75%	
10.0				10-12' clayey Silt, trace gravel, soft-slightly firm, slightly moist, crumbly, no stains/odors, 10 YR 3/1 very dark gray
11.0	1.8/26.7			
12.0			60%	12-18' sandy Gravel, saturated, medium-coarse grained, poorly sorted, no stains/odors, 10 YR 5/6 yellowish brown
13.0	3.2/101			
14.0				
15.0	2.1/63		60%	
16.0				
17.0	1.1/0			
18.0			50%	18-22' silty Clay, trace gravel, very firm, slightly plastic, dry-slightly moist, no stains/odors, 10 YR 3/1 very dark gray.
19.0	0.3/0.2	1745 SB-27 (18-22)		
20.0				
21.0	0.1/0.8		90%	
22.0				22-23.5' silty Sand, trace gravel, saturated, fine-medium grained, moderately sorted, no stains/odors, 10 YR 3/1 very dark gray
23.0	0.4/0.6			
24.0				23.5-24' silty Clay as above, moist, very firm-stiff, 10 YR 4/2 dark grayish brown
				End of boring @ 24 ft-bgs
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-28  
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Date: 6/13/2016      Proj. No.: 356198      Project: Site Investigation  
 Client: Reid Health      Location: Richmond, IN  
 Drilling Company: EnviroCore      Driller: K. Caustoff  
 Logged By: C. Burrows      Drilling Method: Geoprobe  
 Surface Elevation: 924.357 ft-amsl      Top of Casing Elevation:  
 Total Depth: 20 ft-bgs      Diameter: 3.25"      Sampling Method: Dual tube  
 Comments:

Northing: 1674843.459      Easting: 546556.698

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-8" Asphalt
1.0	4.8/0	1715 SB-28 (0-2')	100%	8"-3' sandy Gravel. Gravel up to ~2", subrounded, poorly sorted, dry-slightly moist with depth, no stains or odors, 10 YR 3/4 yellowish brown.
2.0				
3.0				
4.0	10.1/0	1715 SB-28 (3-5') for Dioxins	100%	3-6' gravelly Clay. Gravel is up to ~1", Clay is soft, moist, plastic, cohesive, no stains/odors, 10 YR 3/6 dark yellowish brown
5.0				
6.0				
7.0	1.5/3		100%	6-8' gravelly Clay. Gravel is up to ~1", clay is soft, saturated, cohesive, some iron staining, no odor, 10 YR 4/4 dark yellowish brown
8.0				
9.0	2/200		100%	8-15.5' silty Clay, some gravel up to ~1", clay is soft-firm with depth, moist, plastic, cohesive, no stains/odors, 10 YR 2/2 very dark brown transitions to 10 YR 3/2 very dark grayish brown
10.0				
11.0	2.7/42			
12.0			100%	
13.0	1.1/31			
14.0				
15.0	0.8/37		100%	
16.0				15.5-20' Clay, some gravel up to ~1", hard, dry, non-plastic, non-cohesive, no stains/odors, 10 YR 3/2 very dark grayish brown.
17.0	0.4/12.7			
18.0		1800 SB-28 (17-20')	100%	
19.0	12/16.8			
20.0				End of boring @ 20 ft-bgs
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-29

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Date: 6/13/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 925.917 ft-amsl Top of Casing Elevation: \_\_\_\_\_  
 Total Depth: 20 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: No samples collected. NR= No Recovery  
 Northing: 1674915.985 Easting: 546503.908

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	1.1/2.1			0-2' gravelly <b>Clay</b> Fill, some brick & glass, gravel up to ~1", clay is slightly moist, non-plastic, slightly cohesive, soft, no stains/odors, 10 YR 3/3 dark brown
2.0			100%	
3.0	1.2/0			2-5' <b>Sand</b> Fill, some gravel up to ~1", some clay. Sand is fine-medium grained, moderately sorted, slightly moist, no stains/odors, 10 YR 5/8 yellowish brown.
4.0				
5.0	2.3/0			
6.0			100%	
7.0	4.1/1.1			5-8' <b>Gravel</b> Fill with bricks. Gravel up to ~0.75", subangular, saturated, no stains/odors
8.0				
9.0	1.3/0		100%	8-12' <b>Brick</b> Fill, saturated, no stains or odors
10.0				
11.0	6.6/2.3			
12.0				
13.0	8.9/3.4		0%	12-13' silty, sandy <b>Clay</b> , trace gravel up to ~0.5", hard, plastic, cohesive, saturated, no stains/odors, 10 YR 3/1 very dark gray
14.0				13-16' No recovery
15.0	NR			
16.0				
17.0	1.3/0		100%	16- 20' <b>Gravel</b> up to ~1", subround, saturated
18.0				
19.0	5.4/0			
20.0				End of boring @ 20 ft-bgs
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-30  
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**Date:** 6/13/2016 **Proj. No.:** 356198 **Project:** Site Investigation  
**Client:** Reid Health **Location:** Richmond, IN  
**Drilling Company:** EnviroCore **Driller:** J. Purdy  
**Logged By:** C. Burrows **Drilling Method:** Geoprobe  
**Surface Elevation:** 918.95 ft-amsl **Top of Casing Elevation:** NA  
**Total Depth:** 13 ft-bgs **Diameter:** 3.25" **Sampling Method:** Dual tube  
**Comments:** No samples collected. OVR = over range of PID/FID  
 Northing: 1674400.146, Easting: 546548.336

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	57/3.9	SB-30 (1-3') Sampled for VOCs	100%	0-3' gravelly <b>Sand</b> fill, fabric, cinders, glass fragments, gravel up to 3", sand fine-medium grained, some clay from 1-3', well sorted, dry, increasing moisture with depth, no stains, no odors, 10YR 4/2 dark grayish brown transitioning to 10 YR 3/3 dark brown
2.0	1.32%/0.0			
3.0				
4.0				3-6' silty <b>Clay</b> fill, some sand, bricks, cinders, glass, and gravel up to 0.5", clay moist, soft, non-plastic, cohesive, no stains, no odors, 10 YR 2/2 very dark brown transition to 10 YR 4/4 dark yellowish brown at 4'
5.0	189/0.0			
6.0			75%	6-12.5' sandy <b>Clay</b> fill, some silt, cinders, brick, glass and gravel up to 1", clay moist, soft, non-plastic, cohesive, no stains, slight odor, 10YR 2/2 very dark brown
7.0	56/0			
8.0				
9.0	122/0			
10.0			50%	
11.0	OVR/OVR			Pinkish layer observed at 11.5-12.5', strong odor
12.0				
13.0	42/0		100%	12.5-13' silty sandy <b>Clay</b> , moist, soft, slightly plastic, cohesive, no stains, strong odor, 10YR 5/3 brown
				End boring @ 13 ft-bgs
14.0				
15.0				
16.0				
17.0				
18.0				
19.0				
20.0				
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				





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Soil Boring Log

Boring No: SB-31  
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Date: 6/14/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: A. Taylor, C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 924.018 ft-amsl Top of Casing Elevation: \_\_\_\_\_  
 Total Depth: 24 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: No samples taken.  
Northing: 1674906.939 Easting: 546710.518

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-8" <b>Asphalt</b>
1.0	6.0/0			8"-2' gravelly asphalt <b>Sub-base</b>
2.0			100%	2-8' sandy <b>Clay</b> , some gravel up to ~1", clay is soft, slightly moist, non-plastic, slightly cohesive, no stains/odors, 10 YR 3/2 very dark grayish brown
3.0	12.3/0.2			
4.0				
5.0			100%	10-16' Very moist
6.0	11.0/70			
7.0				
8.0			75%	16-22' saturated, interbedded sandy gravel up to ~0.5", 10 YR 4/3 brown transitions to 10 YR 3/1 very dark gray with depth
9.0	41/184			
10.0				
11.0	30/312		75%	22-24' silty <b>Clay</b> , very firm, slightly moist, non-plastic, cohesive, no stains/odors, 10 YR 3/1 very dark gray
12.0				
13.0	35/270			
14.0			75%	End of boring @ 24 ft-bgs
15.0	38/214			
16.0				
17.0	32/175		100%	
18.0				
19.0	18/51		100%	
20.0				
21.0	16/28		100%	
22.0				
23.0	10/212			
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-32  
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Date: 6/14/2016 Proj. No.: 315592 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 923.519 ft-amsl Top of Casing Elevation: \_\_\_\_\_  
 Total Depth: 24 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: No samples taken.  
Northing: 1674854.288 Easting: 547082.245

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-2" <b>Topsoil</b> , organic material
1.0	0.1/0.1			2"-1.5' <b>Gravel</b> up to ~3", some clay. Gravel is subrounded, poorly sorted, dry, no stains/odors
2.0			100%	1.5-15.5' sandy gravelly <b>Fill</b> , some clay. Gravel is up to ~1", slightly moist, no stains/odors, 10 YR 4/3 dark yellowish brown, increasing clay with depth
3.0	0.1/0.2			
4.0				
5.0	0.1/0.1			
6.0			25%	
7.0	0.3/0.1			
8.0				
9.0	0.2/0.4			
10.0			30%	
11.0	0.1/0.7			
12.0				
13.0	0.1/0.1			
14.0			75%	
15.0	0.2/1.3			
16.0				15.5-18.5' silty <b>Clay</b> , trace gravel, soft, moderately plastic, moist-very moist, no stains, faint odors, 10 YR 2/1 black
17.0	0.5/325			
18.0			85%	
19.0	1.3/268			18.5-23.5' gravelly <b>Sand</b> , saturated, gravel up to ~1", poorly sorted, med-coarse grained, no stains, no odors, 10 YR 4/4 dark yellowish brown
20.0				
21.0	1.5/12.3			
22.0			70%	
23.0	0.7/6.1			
24.0				23.5-24' silty <b>Clay</b> , trace gravel, very firm, slightly moist-moist, no stains/odors, crumbly, 10 YR 3/1 very dark
25.0				End of boring @ 24 ft-bgs
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-33  
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Date: 6/14/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 911.823 ft-amsl Top of Casing Elevation: \_\_\_\_\_  
 Total Depth: 16 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: No samples collected  
 Northing: 1675034.648 Easting: 547584.553

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-5' silty <b>Clay</b> , slightly moist, moderately cohesive/plastic, soft, no stains/odors 10 YR 4/3 dark yellowish brown
1.0	1.2/3.1			
2.0			100%	
3.0	1.1/0.2			
4.0				5-10' sandy <b>Gravel</b> , some clay, grace fill fragments, decreasing clay and fill with depth, saturated at ~8', no stains/odors, 10 YR 4/4 dark yellowish brown
5.0	1.5/0.7			
6.0			75%	
7.0	3.8/0.5			
8.0				10-16' silty <b>Clay</b> , trace gravel, very firm, moderately plastic, slightly moist, no stains, no odors, 10 YR 3/1
9.0	7.2/1.6			
10.0			60%	
11.0	1.3/0.1			
12.0				End boring @ 16 ft-bgs - refusal
13.0	1.0/0.5			
14.0			100%	
15.0	1.6/0.1			
16.0				
17.0				
18.0				
19.0				
20.0				
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-34  
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Date: 6/13/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 917.132 ft-amsl Top of Casing Elevation: \_\_\_\_\_  
 Total Depth: 16 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: No samples collected  
 Northing: 1675336.372 Easting: 547667.393

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-6" Asphalt
1.0	1.4/87.6			6"-1' Asphalt sub-base
2.0			100%	1-8' Clay with some sand and gavel, soft, moist-very moist ~3/5', no stains, faint odor, 10 YR 2/1 black, plastic, increasing gravel content with depth
3.0	2.1/324			
4.0				
5.0	5.8/1000			
6.0			75%	
7.0	4.1/1000			
8.0				8-12.5' sandy Gravel, saturated, medium-coarse grained, poorly sorted, no stains/odors, 10 YR 5/6 yellowish brown
9.0	1.8/297			
10.0			60%	
11.0	1.5/143			
12.0				
13.0	0.8/12.6			12.5-16' silty Clay, trace gravel, slightly moist, very firm, moderately plastic, no stains, no odors, 10 YR 3/1 gray
14.0			90%	
15.0	0.7/6.1			
16.0				End of boring @ 16 ft-bgs
17.0				
18.0				
19.0				
20.0				
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-35  
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Date: 6/13/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 957.415 ft-amsl Top of Casing Elevation: \_\_\_\_\_  
 Total Depth: 2 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: *Encountered refusal at 2 ft-bgs, attempted to offset, refusal encountered at same depth in offset borings*  
 Northing: 1675559.302 Easting: 547154.437

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				
1.0	0.1/6.3	1455 SB-35 (0-2) +Dup for Dioxins	100%	0-2' Topsoil, organic material, clayey sand, trace gravel up to 1.5", soft, dry-slightly moist, fine-medium grained, moderately well sorted, no stains/odors, 10 YR 4/3 dark yellowish brown
2.0				End boring @ 2 ft-bgs, refusal
3.0				
4.0				
5.0				
6.0				
7.0				
8.0				
9.0				
10.0				
11.0				
12.0				
13.0				
14.0				
15.0				
16.0				
17.0				
18.0				
19.0				
20.0				
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				



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Soil Boring Log

Boring No: SB-36  
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Date: 6/15/2016 Proj. No.: 356198 Project: Site Investigation  
 Client: Reid Health Location: Richmond, IN  
 Drilling Company: EnviroCore Driller: K. Caustoff  
 Logged By: C. Burrows Drilling Method: Geoprobe  
 Surface Elevation: 905.226 ft-amsl Top of Casing Elevation: \_\_\_\_\_  
 Total Depth: 12 ft-bgs Diameter: 3.25" Sampling Method: Dual tube  
 Comments: *No samples collected*  
 Northing: 1674351.703 Easting: 546586.224

Depth (ft.)	PID/FID Reading	Sample Interval	Recovery (%)	Description/Soil Classification (Color, Texture, Structures)
0.0				0-3" <b>Topsoil</b> , organic material
1.0				3"-6' sandy gravelly <b>Clay</b> fill, brick fragments, gravel up to 1.5", dry-slightly moist, 10 YR 5/6 yellowish brown
2.0			100%	
3.0				
4.0				
5.0				
6.0			100%	6-9' sandy <b>Gravel</b> , saturated, gravel up to 1.5", coarse grained, poorly sorted, no stains/odors, 10 YR 5/6 yellowish brown
7.0				
8.0				
9.0				
10.0			100%	9-12' silty <b>Clay</b> , trace gravel up to 1", very firm-stiff, slightly moist, crumbly, no stains/odors, 10 YR 4/1 dark gray
11.0				
12.0				End boring @ 12 ft-bgs
13.0				
14.0				
15.0				
16.0				
17.0				
18.0				
19.0				
20.0				
21.0				
22.0				
23.0				
24.0				
25.0				
26.0				
27.0				
28.0				
29.0				
30.0				

*Appendix B*  
*Soil and Groundwater Sample Matrix*  
*from May 2016 IWP*

APPROVED INVESTIGATION WORK PLAN  
SOIL AND GROUNDWATER SAMPLING AND ANALYSIS MATRIX  
FORMER REID HOSPITAL SITE  
RICHMOND, INDIANA

Sample ID	Investigation Objective	Proposed Sample Location Details				Soil									Groundwater								
		Approximate Total Boring Depth (ft bgs)	Number of Soil Samples	Anticipated Soil Sampling Depth Interval (ft bgs)	Anticipated Groundwater Sample Depth (ft bgs)	Arsenic	Chromium	Lead	Thallium	Dioxins	Radionuclides	Lithium	PAHs	PCBs	Arsenic	Chromium	Thallium	Radionuclides	Lithium	Dioxin	PAHs	PCBs	Groundwater Flow Direction
SB-16/MW-1	Upgradient/Offsite Baseline Data and Groundwater Flow	25	2	0 to 2, 15 to 20	20 to 25	X	X	X	X		X	X	X		X	X	X	X	X	X	X		X
SB-17	Upgradient/Offsite Baseline Data and Groundwater Flow	15	2	0 to 2, 6 to 15	NS	X	X	X	X		X	X	X										
SB-18/MW-2	Delineation of PAHs in Dumping Area	15	2	0 to 2, 6 to 8	10 to 15	X		X	X		X	X	X		X	X	X	X	X	X	X		X
SB-19	Delineation of PAHs in Dumping Area	15	2	0 to 2, 6 to 8	NS	X		X	X		X	X	X										
SB-20/MW-3	Radionuclide Investigation and Groundwater Flow	30	0	NS	20 to 30										X	X	X	X	X	X	X		X
SB-21/MW-4	Radionuclide Investigation and Groundwater Flow	30	0	NS	20 to 30										X	X	X	X	X	X	X		X
SB-22/MW-5	Radionuclide & PCB Evaluation - Groundwater Flow	10	2	0 to 2 (fill), 2 to 10 (below fill)	5 to 10	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
SB-23/MW-6	Groundwater Flow	25	2	0 to 2 (fill), 10 to 20 (below fill)	20 to 25						X	X			X	X	X	X	X	X	X		X
SB-24/MW-7	Groundwater Flow & Characterization	30	2	0 to 2 (fill), 10 to 20 (below fill)	20 to 30						X	X			X	X	X	X	X	X	X		X
SB-25/MW-8	Groundwater Flow & Characterization	15	2	0 to 2 (fill), 10 to 15 (below fill)	10 to 15						X	X			X	X	X	X	X	X	X		X
SB-26	Delineation of Fill Material	25	2	0 to 2 (fill), 10 to 20 (below fill)	NS						X	X											
SB-27	Delineation of Fill Material	25	2	0 to 2 (fill), 10 to 20 (below fill)	NS						X	X											
SB-28	Delineate/Confirm Lead and PCBs	20	2	0 to 2 (fill), 10 to 20 (below fill)	NS	X		X	X		X	X	X										
SB-29	Visual and field screening delineation of fill area boundaries	13	NS	NS	NS																		
SB-30	Visual and field screening delineation of fill area boundaries	13	NS	NS	NS																		
SB-31	Visual and field screening delineation of fill area boundaries	13	NS	NS	NS																		
SB-32	Visual and field screening delineation of fill area boundaries	13	NS	NS	NS																		
SB-33	Visual and field screening delineation of fill area boundaries	13	NS	NS	NS																		
SB-34	Visual and field screening delineation of fill area boundaries	13	NS	NS	NS																		
SB-35	Investigate Former Incinerator	20	2	0 to 2, 10 to 20	NS				X	X	X	X											

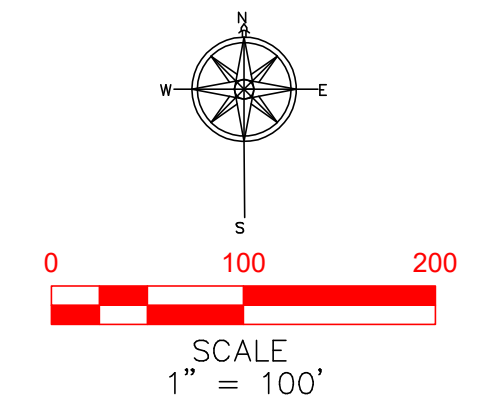
**Notes:**

SB = Soil Boring  
ft bgs = feet below ground surface  
NS = No sample anticipated  
All samples submitted for laboratory analysis will be analyzed by the laboratory using standard US EPA Test Methods  
Anticipated depths are estimated based on boring logs and findings from the Phase II ESA  
Table does not summarize wipe samples or surveys that will be conducted as part of the SIWP implementation  
Additional soil and/or groundwater samples may be collected if conditions or field observations warrant



*Appendix C*  
*Soil Boring and Monitoring Well*  
*Survey Report*

NW Cor SW Qtr  
Sec 28-T14N-R1E

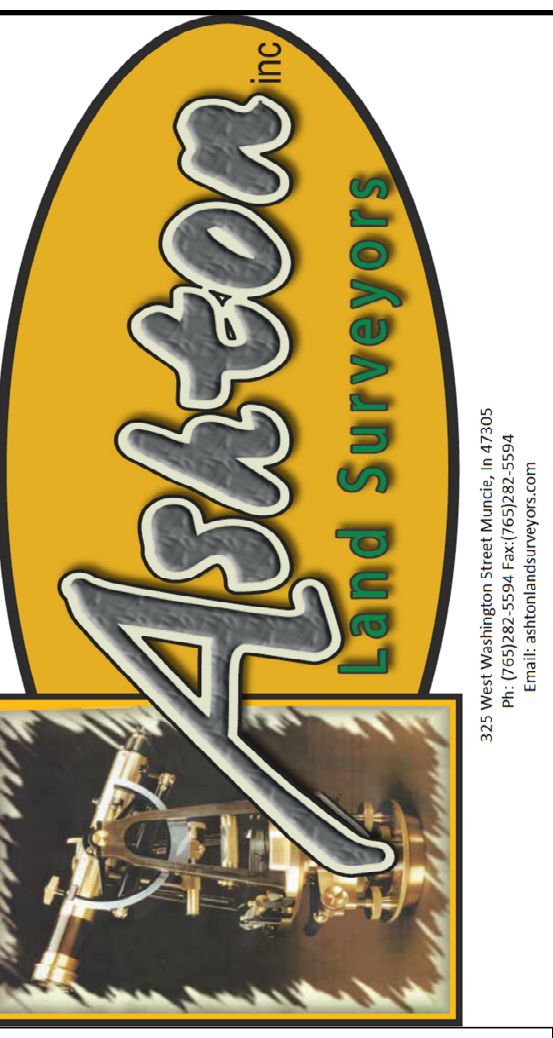


List Points Report  
Tue Jun 21 11:42:23 2016  
File: P:\Projects\2016 Projects\2016277 ERM, Inc\dwg\2016277 Richmond Hosp.crd

PointNo.	Northing(Y)	Easting(X)	Elev(Z)	Description
1	1674659.42	546444.53	923.30	County Mon
2	1674677.34	549078.75	951.20	County Mon
3	1677418.82	546464.73	989.40	County Mon
300	1674486.89	546577.39	920.96	GS
301	1674486.81	546576.50	920.98	NORTH SIDE OF PIPE
302	1674487.11	546578.55	921.19	MW5
303	1674400.15	546548.34	918.95	SB30
304	1674351.70	546586.22	905.23	SB36
305	1674843.46	546556.70	924.36	SB28
306	1674915.59	546503.91	925.02	SB29
307	1675085.66	546607.71	927.79	SB26
308	1675171.47	546855.48	929.02	GS
309	1675171.96	546854.80	928.18	NORTH SIDE OF PIPE
310	1675172.19	546855.01	928.97	MW3
311	1674900.59	546808.47	923.76	GS
312	1674900.24	546808.01	923.44	NORTH SIDE OF PIPE
313	1674900.54	546807.99	923.80	MW6
314	1674906.94	546710.52	924.02	SB31
315	1674654.29	547002.25	923.52	SB32
316	1675119.10	547578.93	920.29	SB27
317	1675034.65	547584.55	911.82	SB33
318	1674955.89	547507.98	913.20	GS
319	1674955.43	547508.64	917.28	MW-7
320	1674955.28	547508.53	917.01	NORTH SIDE OF PIPE
321	1675380.54	547930.46	915.29	GS
322	1675380.50	547931.01	914.96	NORTH SIDE OF PIPE
323	1675380.75	547930.77	915.27	MW6
324	1675926.33	547930.54	920.33	SB19
325	1676049.79	547901.66	920.63	SB17
326	1675678.76	547877.48	919.95	GS
327	1675877.61	547876.69	923.30	MW-2
328	1675877.61	547876.79	922.83	NORTH SIDE OF PIPE
329	1675336.37	547567.39	917.13	SB34
330	1675378.41	547369.95	940.06	GS
331	1675379.26	547369.68	939.56	NORTH SIDE OF PIPE
332	1675379.54	547369.64	940.14	MW4
333	1675569.30	547154.44	957.41	SB35
334	1675665.96	546512.19	966.76	GS
335	1675666.05	546511.53	966.77	MW1
336	1675666.80	546511.49	966.42	NORTH SIDE OF PIPE

Number of points listed= 40

SE Cor SW Qtr  
Sec 28-T14N-R1E



325 W. Washington St.  
Muncie, IN 47305  
Ph: 765-282-5594  
Fax: 765-282-5596  
Email: ashtonlandsurveyors.com

Environmental Resource Management  
1403 Chester Blvd. Richmond, Indiana 47374

I affirm, under the penalties for perjury, that I have taken reasonable care to reduce each Social Security number in this document, unless required by law. Holden L. Ashton

SECTION CORNER COORDINATES ARE BASED ON INDIANA STATE PLANE EAST ZONE (NORTH AMERICAN DATUM OF 1983, CORS 96 EPOC 2002.000)

Revisions	
No.	Reason:

Drawn: JDM  
Date: 6/21/2016  
Job: 2016277  
Client: Aaron Friedrich  
Crew: EHA, KN  
Electronic Field Book  
Field Date: 6/20/2016  
IUPPS REF. #N/A

Client: Aaron Friedrich  
Company: ERM, inc

1403 Chester Blv.  
Richmond, Indiana 47374

Drawn: JDM  
Job# 2016277



Point #	Northing	Easting	Elevation	Description
100	1674485.885	546577.388	920.956	GS
101	1674486.807	546578.496	920.978	NORTH SIDE OF PIPE
102	1674487.108	546578.553	921.189	MW5
103	1674400.146	546548.336	918.95	SB30
104	1674351.703	546586.224	905.226	SB36
105	1674843.459	546556.698	924.357	SB28
106	1674915.985	546503.908	925.917	SB29
107	1675085.655	546607.706	927.787	SB26
108	1675171.465	546855.485	929.023	GS
109	1675171.956	546854.8	928.185	NORTH SIDE OF PIPE
110	1675172.186	546855.011	928.974	MW3
111	1674900.59	546808.475	923.762	GS
112	1674900.239	546808.012	923.442	NORTH SIDE OF PIPE
113	1674900.54	546807.99	923.799	MW6
114	1674906.939	546710.518	924.018	SB31
115	1674854.288	547082.245	923.519	SB32
116	1675119.096	547578.931	920.287	SB27
117	1675034.648	547584.553	911.823	SB33
118	1674955.887	547507.977	913.202	GS
119	1674955.43	547508.644	917.279	MW-7
120	1674955.285	547508.533	917.008	NORTH SIDE OF PIPE
121	1675380.537	547930.464	915.29	GS
122	1675380.504	547931.011	914.975	NORTH SIDE OF PIPE
123	1675380.755	547930.767	915.273	MW8
124	1675926.331	547930.535	920.327	SB19
125	1676049.791	547901.662	920.634	SB17
126	1675878.765	547877.481	919.951	GS
127	1675877.609	547876.689	923.299	MW-2
128	1675877.61	547876.793	922.828	NORTH SIDE OF PIPE
129	1675336.372	547667.393	917.132	SB34
130	1675378.407	547369.95	940.056	GS
131	1675379.26	547369.679	939.56	NORTH SIDE OF PIPE
132	1675379.545	547369.639	940.138	MW4
133	1675559.302	547154.437	957.415	SB35
134	1675665.959	546512.194	966.765	GS
135	1675666.053	546511.53	966.774	MW1
136	1675665.797	546511.492	966.417	NORTH SIDE OF PIPE

Field Crew: EHA,KN

Date: 6/21/2016  
Field Date: 6/20/2016

*Appendix D*  
*Groundwater Sampling Purge Forms*



## Environmental Resources Management Low Flow Groundwater Sampling Field Data form

Project: <u>Former Reid Hospital</u>	Well ID: <b>MW-1</b>	Purge/Sampling Method: <u>Bladder Pump</u>
Project Number: _____	Well Diameter: <u>2"</u>	Stabilization Equipment: <u>Horiba/LaMotte</u>
Date: <u>6/20/2016</u>	Static Water Level: <u>16.48'</u>	Comments: _____
Samplers: <u>C Burrows</u>	Measured Well Depth: <u>26'</u>	
Well Screened Interval: <u>16 - 26'</u>	Pump Intake Depth: <u>21'</u>	

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/20/16	1250	X		0.1	7.65	25.80	NA	7.87	NA	1.140	NA	4.65	NA	29.0	NA	691.0	NA
	1255	X		0.2		25.46	NA	7.77	NA	1.140	NA	4.25	NA	21.0	NA	347.0	NA
	1300	X		0.3		23.66	FALSE	7.75	FALSE	1.080	FALSE	3.91	FALSE	28.0	TRUE	116.0	FALSE

Stabilization Criteria      ± 3%                                  ± 0.1                                  ± 3%                                  ± 10%                                  ± 10 mV                                  ± 10%

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Laboratory			City/State		
Analysis/Parameter	Container/Volume	Preservative/Preparation	Analysis/Parameter	Container/Volume	Preservative/Preparation
Total Metals	1 x 1 L Plastic	HNO3	PAHs	2 x 1 L Amber	None
Field Filtered Metals	1 x 250 mL Plastic	HNO3	Dioxins	2 x 1 L Amber	None
Radionuclides	2 x 1 L Plastic	HNO3			
Gross alpha/beta	1 x 500 mL Plastic	HNO3			

Water Quality Meter Calibration Comment: _____	Most Recent Calibration: Date: <u>6/20/2016</u> Time: <u>1000</u> Meter: <u>Horiba/LaMotte</u>	Standard    Reading pH 4         4.01 pH 7         7.0	Standard    Reading 
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## Environmental Resources Management Low Flow Groundwater Sampling Field Data form

Project: Former Reid Hospital  
 Project Number: 0315592  
 Date: 6/20/2016  
 Samplers: C Burrows  
 Well Screened Interval: 5-15'

Well ID: MW-2  
 Well Diameter: 2"  
 Static Water Level: 10.42'  
 Measured Well Depth: 18.37'  
 Pump Intake Depth: 14'

Purge/Sampling Method: Bladder Pump  
 Stabilization Equipment: Horiba/LaMotte  
 Comments: DTW measured from TOC, screened interval measured in ft-bgs. Will correct once survey data collected

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/20/16	905	X		0.1	10.25	19.23	NA	8.93	NA	0.627	NA	1.08	NA	223.0	NA	1286.0	NA
	910	X		0.2	10.25	16.65	NA	8.02	NA	0.710	NA	0.98	NA	97.0	NA	992.0	NA
	915	X		0.3	10.25	15.92	FALSE	7.97	FALSE	0.727	FALSE	0.75	FALSE	34.0	FALSE	782.0	FALSE
	920	X		0.4	10.25	16.17	FALSE	7.89	FALSE	0.723	TRUE	0.69	FALSE	-7.0	FALSE	618.0	FALSE
	925	X		0.5	10.25	15.90	TRUE	7.86	FALSE	0.725	TRUE	0.64	FALSE	-37.0	FALSE	588.0	FALSE
	930	X		0.6	10.25	15.43	FALSE	7.84	TRUE	0.703	FALSE	0.58	FALSE	-47.0	FALSE	496.0	FALSE
	935	X		0.7	10.25	15.57	TRUE	7.82	TRUE	0.688	FALSE	0.55	FALSE	-55.0	FALSE	281.0	FALSE
	940	X		0.8	10.25	15.69	TRUE	7.82	TRUE	0.682	TRUE	0.55	TRUE	-59.0	FALSE	167.0	FALSE
	945	X		0.9	10.25	15.53	TRUE	7.80	TRUE	0.681	TRUE	0.53	TRUE	-60.0	TRUE	59.6	FALSE
	950	X		1	10.25	15.57	TRUE	7.79	TRUE	0.681	TRUE	0.52	TRUE	-61.0	TRUE	36.3	FALSE
	955	X		1.1	10.25	15.50	TRUE	7.78	TRUE	0.675	TRUE	0.50	TRUE	-62.0	TRUE	15.9	FALSE
	1000	X		1.2	10.25	15.76	TRUE	7.76	TRUE	0.670	TRUE	0.54	TRUE	-61.0	TRUE	9.7	FALSE
	1005		X	1.3	10.25	15.59	TRUE	7.75	TRUE	0.671	TRUE	0.53	TRUE	-62.0	TRUE	5.1	FALSE

Stabilization Criteria      ± 3%                      ± 0.1                      ± 3%                      ± 10%                      ± 10 mV                      ± 10%

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

**Laboratory City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Total Metals	1 x 1 L Plastic	HNO3
Field Filtered Metals	1 x 1 L Plastic	HNO3
Radionuclides	1 x 1 L Plastic	HNO3
Gross Alpha/Beta	1 x 500 mL Plastic	HNO3

Analysis/Parameter	Container/Volume	Preservative/Preparation
PAHs	2 x 1 L Amber	None
Dioxins	2 x 1 L Amber	None

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/21/2016
Time	830
Meter	Horiba/LaMotte

Standard	Reading
pH 4	3.98
pH 7	7.0

Standard	Reading





## Environmental Resources Management Low Flow Groundwater Sampling Field Data Form

Project:	Reid Hospital	Well ID:	MW-3	Purge/Sampling Method:	BLADDER PUMP
Project Number:		Well Diameter:	2"	Stabilization Equipment:	HORIBA U-50
Date:	6/20/16	Static Water Level:	8.88	Comments:	
Samplers:	T. McGEARY	Measured Well Depth:	26'		
Well Screened Interval:	16-26'	Pump Intake Depth:	21'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/20/16	1600	X		0	8.85	31.21	NA	7.99	NA	0.583	NA	1.44	NA	77.0	NA	1000.0	NA
	1605	X		0.25	8.91	23.44	NA	7.44	NA	0.638	NA	0.36	NA	26.0	NA	626.0	NA
	1610	X		0.5	8.93	20.45	FALSE	7.36	FALSE	0.665	FALSE	0.22	FALSE	17.0	FALSE	113.0	FALSE
	1615	X		1	8.96	19.89	FALSE	7.32	FALSE	0.677	FALSE	0.16	FALSE	12.0	FALSE	109.9	FALSE
	1620	X		1.1	8.96	19.58	FALSE	7.33	TRUE	0.680	TRUE	0.15	FALSE	10.0	TRUE	81.6	FALSE
	1625	X		1.4	8.97	19.18	FALSE	7.34	TRUE	0.685	TRUE	0.14	FALSE	7.0	TRUE	71.9	FALSE
	1630	X		1.5	8.98	18.96	FALSE	7.33	TRUE	0.689	TRUE	0.14	TRUE	5.0	TRUE	69.1	FALSE
	1635	X		1.75	9	18.66	TRUE	7.33	TRUE	0.687	TRUE	0.12	FALSE	3.0	TRUE	65.9	TRUE
	1640	X		2	9	18.64	TRUE	7.32	TRUE	0.690	TRUE	0.11	FALSE	3.0	TRUE	64.2	TRUE
	1645	X		2.15	9	18.28	TRUE	7.33	TRUE	0.691	TRUE	0.13	FALSE	1.0	TRUE	57.8	FALSE
	1650	X		2.25	9	18.51	TRUE	7.32	TRUE	0.692	TRUE	0.15	FALSE	0.0	TRUE	58.3	TRUE
	1655	X		2.75	9	18.14	TRUE	7.33	TRUE	0.691	TRUE	0.14	FALSE	-2.0	TRUE	57.2	TRUE
	1700	X		2.9	9.01	17.17	TRUE	7.33	TRUE	0.708	TRUE	0.12	FALSE	-1.0	TRUE	81.0	FALSE
	1705	X		3	9.03	17.98	FALSE	7.33	TRUE	0.694	TRUE	0.10	FALSE	0.0	TRUE	73.3	FALSE
	1710	X		3.15	9.03	17.91	FALSE	7.31	TRUE	0.696	TRUE	0.13	FALSE	-3.0	TRUE	68.8	FALSE
	1715	X		3.4	9.02	18.20	TRUE	7.32	TRUE	0.692	TRUE	0.12	FALSE	-2.0	TRUE	68.5	TRUE
	1720	X		3.75	9.03	17.99	TRUE	7.30	TRUE	0.695	TRUE	0.12	TRUE	-3.0	TRUE	68.9	TRUE
	1725	X		3.95	9.03	17.99	TRUE	7.31	TRUE	0.695	TRUE	0.14	FALSE	-3.0	TRUE	71.9	TRUE
	1730	X		4.1	9.04	18.00	TRUE	7.31	TRUE	0.692	TRUE	0.16	FALSE	-3.0	TRUE	73.9	TRUE
	1735	X		4.5	9.03	17.96	TRUE	7.30	TRUE	0.695	TRUE	0.18	FALSE	-4.0	TRUE	74.1	TRUE
	1740		X	4.75	9.09	17.73	TRUE	7.32	TRUE	0.689	TRUE	0.21	FALSE	-6.0	TRUE	68.6	TRUE

Stabilization Criteria      ± 3%                      ± 0.1                      ± 3%                      ± 10%                      ± 10 mV                      ± 10%

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Analysis/Parameter	Container/Volume	Preservative/Preparation
RADIONUCLIDES	2 - 1L PLASTIC	HNO3
GROSS ALPHA/BETA	1 - 500mL PLASTIC	HNO3
DISSOLVED METALS	1 - 250mL PLASTIC	HNO3
TOTAL METALS	1 - 1L PLASTIC	HNO3

Analysis/Parameter	Container/Volume	Preservative/Preparation
PAH	2 - 1L AMBER	NONE
DIOXIN	2 - 1L AMBER	NONE

Water Quality Meter Calibration
Comments:

Most Recent Calibration:	
Date	12/16/2014
Time	830
Meter	HORIBA U-50

Standard	Reading
pH 7.00	7.00
pH 4.00	4.0
pH 10.00	10.0

Standard	Reading
Cond 4.49	4.49



## Environmental Resources Management Low Flow Groundwater Sampling Field Data Form

Project: <u>Reid Hospital</u>	Well ID: <u>MW-3</u>	Purge/Sampling Method: <u>BLADDER PUMP</u>
Project Number: _____	Well Diameter: <u>2"</u>	Stabilization Equipment: <u>HORIBA U-50</u>
Date: <u>6/20/16</u>	Static Water Level: _____	Comments:
Samplers: <u>T. McGEARY</u>	Measured Well Depth: <u>26'</u>	
Well Screened Interval: <u>16-26'</u>	Pump Intake Depth: <u>21'</u>	

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
6/20/16	1600	X		0	8.85	31.21	7.99	0.583	1.44	77	1000
	1605	X		0.25	8.91	23.44	7.44	0.638	0.36	26	626
	1610	X		0.5	8.93	20.45	7.36	0.665	0.22	17	113
	1615	X		1	8.96	19.89	7.32	0.677	0.16	12	109.9
	1620	X		1.1	8.96	19.58	7.33	0.68	0.15	10	81.6
	1625	X		1.4	8.97	19.18	7.34	0.685	0.14	7	71.9
	1630	X		1.5	8.98	18.96	7.33	0.689	0.14	5	69.1
	1635	X		1.75	9	18.66	7.33	0.687	0.12	3	65.9
	1640	X		2	9	18.64	7.32	0.69	0.11	3	64.2
	1645	X		2.15	9	18.28	7.33	0.691	0.13	1	57.8
	1650	X		2.25	9	18.51	7.32	0.692	0.15	0	58.3
	1655	X		2.75	9	18.14	7.33	0.691	0.14	-2	57.2
	1700	X		2.9	9.01	17.17	7.33	0.708	0.12	-1	81
	1705	X		3	9.03	17.98	7.33	0.694	0.1	0	73.3
	1710	X		3.15	9.03	17.91	7.31	0.696	0.13	-3	68.8
	1715	X		3.4	9.02	18.2	7.32	0.692	0.12	-2	68.5
	1720	X		3.75	9.03	17.99	7.3	0.695	0.12	-3	68.9
	1725	X		3.95	9.03	17.99	7.31	0.695	0.14	-3	71.9
	1730	X		4.1	9.04	18	7.31	0.692	0.16	-3	73.9
	1735	X		4.5	9.03	17.96	7.3	0.695	0.18	-4	74.1
	1740		X	4.75	9.09	17.73	7.32	0.689	0.21	-6	68.6

Analysis/Parameter	Container/Volume	Preservative/Preparation
RADIONUCLIDES	2 - 1L PLASTIC	HNO3
GROSS ALPHA/BETA	1 - 500mL PLASTIC	HNO3
DISSOLVED METALS	1 - 250mL PLASTIC	HNO3
TOTAL METALS	1 - 1L PLASTIC	HNO3

Analysis/Parameter	Container/Volume	Preservative/Preparation
PAH	2 - 1L AMBER	NONE
DIOXIN	2 - 1L AMBER	NONE

Water Quality Meter Calibration
Comments:

Most Recent Calibration:	
Date	12/16/2014
Time	830
Meter	HORIBA U-50

Standard	Reading
pH 7.00	7.00
pH 4.00	4.00
pH 10.00	10.00

Standard	Reading
Cond 4.49	4.49





**Environmental Resources Management  
Low Flow Groundwater Sampling Field Data form**

Project:	Former Reid Hospital	Well ID:	<b>MW-4</b>	Purge/Sampling Method:	Bladder Pump
Project Number:	0315592	Well Diameter:	2"	Stabilization Equipment:	Horiba/LaMotte
Date:	6/20/2016	Static Water Level:	22.24'	Comments: Well went dry - water level below intake of bladder pump; unable to collect sample.	
Samplers:	C Burrows	Measured Well Depth:	22.24'		
Well Screened Interval:	16-26'	Pump Intake Depth:	14'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/20/16	1140	X		0.05	21.92	21.77	NA	8.29	NA	2.680	NA	1.72	NA	-42.0	NA	966.0	NA
	1150	X		0.1	22.68	20.89	NA	7.87	NA	2.500	NA	1.05	NA	-120.0	NA	334.0	NA
	1150	X		0.15	22.89	20.97	FALSE	7.80	FALSE	2.520	FALSE	0.73	FALSE	-120.0	FALSE	876.0	FALSE
	1155	X		0.2	23.2	23.12	FALSE	7.78	TRUE	2.580	FALSE	0.59	FALSE	-134.0	FALSE	789.0	FALSE
	1200	X		0.25	24.1	23.01	FALSE	7.79	TRUE	2.530	TRUE	0.33	FALSE	-152.0	FALSE	687.0	FALSE
	1205	X		0.3	25.3	22.80	TRUE	7.80	TRUE	2.410	FALSE	0.30	FALSE	-175.0	FALSE	643.0	FALSE
	1210	X		0.35	dry	dry		dry		dry		dry		dry	dry		

Stabilization Criteria      ± 3%                      ± 0.1                      ± 3%                      ± 10%                      ± 10 mV                      ± 10%

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

**Laboratory City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
NA		
NA		
NA		
NA		

Analysis/Parameter	Container/Volume	Preservative/Preparation
NA		
NA		

Water Quality Meter Calibration Comment:
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Most Recent Calibration:	
Date	6/21/2016
Time	830
Meter	Horiba/LaMotte

Standard	Reading
pH 4	3.98
pH 7	7.0

Standard	Reading



## Environmental Resources Management Low Flow Groundwater Sampling Field Data Form

Project:	Reid Hospital	Well ID:	MW-5	Purge/Sampling Method:	Bladder Pump
Project Number:		Well Diameter:	2"	Stabilization Equipment:	Horiba U-50
Date:	6/20/16	Static Water Level:	16.81	Comments:	
Samplers:	T. McGeary	Measured Well Depth:	25'		
Well Screened Interval		Pump Intake Depth:	20'		

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/20/16	1135	X		0	16.8	23.20	NA	6.52	NA	2.130	NA	1.95	NA	-11.0	NA	540.0	NA
	1140	X		0.15	16.87	18.07	NA	6.84	NA	2.190	NA	0.81	NA	-41.0	NA	314.0	NA
	1145	X		0.25	16.87	17.36	FALSE	6.86	FALSE	2.200	FALSE	0.53	FALSE	-51.0	FALSE	277.0	FALSE
	1150	X		0.4	16.88	16.51	FALSE	6.91	TRUE	2.190	TRUE	0.41	FALSE	-57.0	FALSE	58.5	FALSE
	1155	X		0.5	16.89	16.29	FALSE	6.92	TRUE	2.200	TRUE	0.29	FALSE	-60.0	TRUE	59.8	FALSE
	1200	X		0.75	16.89	16.23	TRUE	6.91	TRUE	2.210	TRUE	0.21	FALSE	-64.0	TRUE	48.6	FALSE
	1205	X		1	16.89	16.05	TRUE	6.91	TRUE	2.210	TRUE	0.21	FALSE	-66.0	TRUE	46.7	FALSE
	1210	X		1.2	16.9	16.00	TRUE	6.93	TRUE	2.200	TRUE	0.21	TRUE	-67.0	TRUE	32.7	FALSE
	1215	X		1.45	16.9	16.19	TRUE	6.92	TRUE	2.210	TRUE	0.23	TRUE	-69.0	TRUE	28.0	FALSE
	1220	X		1.5	16.9	16.32	TRUE	6.93	TRUE	2.221	TRUE	0.15	FALSE	-71.0	TRUE	23.1	FALSE
	1225	X		1.6	16.9	16.33	TRUE	6.92	TRUE	2.210	TRUE	0.12	FALSE	-72.0	TRUE	20.5	FALSE
	1230	X		1.9	16.91	15.88	TRUE	6.92	TRUE	2.200	TRUE	0.13	FALSE	-72.0	TRUE	20.3	FALSE
	1235	X		2.1	16.91	16.14	TRUE	6.93	TRUE	2.200	TRUE	0.11	FALSE	-73.0	TRUE	17.0	FALSE
	1240	X		2.2	16.91	15.88	TRUE	6.92	TRUE	2.200	TRUE	0.09	FALSE	-73.0	TRUE	14.0	FALSE
	1245	X		2.5	16.91	15.89	TRUE	6.92	TRUE	2.200	TRUE	0.10	FALSE	-73.0	TRUE	8.55	FALSE
	1250	X		2.75	16.91	15.84	TRUE	6.92	TRUE	2.200	TRUE	0.05	FALSE	-74.0	TRUE	6.52	FALSE
	1255	X		2.85	16.91	16.00	TRUE	6.92	TRUE	2.200	TRUE	0.05	FALSE	-75.0	TRUE	5.96	FALSE
	1300	X		3	16.91	16.09	TRUE	6.91	TRUE	2.200	TRUE	0.04	FALSE	-75.0	TRUE	5.27	FALSE
	1305	X		3.15	16.91	16.11	TRUE	6.91	TRUE	2.200	TRUE	0.04	FALSE	-76.0	TRUE	4.67	FALSE
	1310	X		3.25	16.92	16.11	TRUE	6.91	TRUE	2.190	TRUE	0.04	TRUE	-75.0	TRUE	4.48	FALSE
	1315		X	3.5	16.92	15.86	TRUE	6.91	TRUE	2.190	TRUE	0.04	TRUE	-75.0	TRUE	4.44	TRUE

Stabilization Criteria      ± 3%                      ± 0.1                      ± 3%                      ± 10%                      ± 10 mV                      ± 10%

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Analysis/Parameter	Container/Volume	Preservative/Preparation
Radionuclides	2 - 1 L Plastic	HNO3
Dissolved Metals	1 - 250 mL Plastic	HNO3
Total Metals	1 - 1 L Plastic	HNO3
Gross Alpha/Beta	1 - 500 mL Plastic	HNO3

Analysis/Parameter	Container/Volume	Preservative/Preparation
PAH	2 - 1L Amber	None
Dioxin	2 - 1L Amber	None
PCBs	2 - 1L Amber	None

Water Quality Meter Calibration
Comments:

Most Recent Calibration:	
Date	12/16/2014
Time	830
Meter	Horiba U-50

Standard	Reading
pH 7.00	7.00
pH 4.00	4.0
pH 10.00	10.0

Standard	Reading
Cond 4.49	4.49



## Environmental Resources Management Low Flow Groundwater Sampling Field Data Form

Project: Reid Hospital      Well ID: MW-5      Purge/Sampling Method: Bladder Pump  
 Project Number: \_\_\_\_\_      Well Diameter: 2      Stabilization Equipment: Horiba U-50  
 Date: 6/20/16      Static Water Level: 16.81      Comments: \_\_\_\_\_  
 Samplers: T. McGeary      Measured Well Depth: 25  
 Well Screened Interval: \_\_\_\_\_      Pump Intake Depth: 20

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/20/16		X					NA		NA		NA		NA		NA		NA
		X					NA		NA		NA		NA		NA		NA
		X															
		X															
		X															
		X															
		X															
		X															
		X															
		X															
		X															
		X															
		X															
		X															
		X															
		X															
		X															
		X															

Stabilization Criteria      ± 3%      ± 0.1      ± 3%      ± 10%      ± 10 mV      ± 10%

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Analysis/Parameter	Container/Volume	Preservative/Preparation	Analysis/Parameter	Container/Volume	Preservative/Preparation
Radionuclides	2 - 1 L Plastic	HNO3	PAH	2 - 1L Amber	None
Dissolved Metals	1 - 250 mL Plastic	HNO3	Dioxin	2 - 1L Amber	None
Total Metals	1 - 1 L Plastic	HNO3	PCBs	2 - 1L Amber	None
Gross Alpha/Beta	1 - 500 mL Plastic	HNO3			

Water Quality Meter Calibration

Comments:

Most Recent Calibration:	
Date	12/16/2014
Time	830
Meter	Horiba U-50

Standard	Reading
pH 7.00	7.00
pH 4.00	4.0
pH 10.00	10.0

Standard	Reading
Cond 4.49	4.49



## Environmental Resources Management Low Flow Groundwater Sampling Field Data Form

Project: <u>Reid Hospital</u>	Well ID: <u>MW-5</u>	Purge/Sampling Method: <u>Bladder Pump</u>
Project Number: _____	Well Diameter: <u>2"</u>	Stabilization Equipment: <u>Horiba U-50</u>
Date: <u>6/20/16</u>	Static Water Level: _____	Comments:
Samplers: <u>T. McGeary</u>	Measured Well Depth: <u>25'</u>	
Well Screened Interval: _____	Pump Intake Depth: <u>20'</u>	

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
6/20/16	1135	X		0	16.8	23.2	6.52	2.13	1.95	-11	540
	1140	X		0.15	16.87	18.07	6.84	2.19	0.81	-41	314
	1145	X		0.25	16.87	17.36	6.86	2.2	0.53	-51	277
	1150	X		0.4	16.88	16.51	6.91	2.19	0.41	-57	58.5
	1155	X		0.5	16.89	16.29	6.92	2.2	0.29	-60	59.8
	1200	X		0.75	16.89	16.23	6.91	2.21	0.21	-64	48.6
	1205	X		1	16.89	16.05	6.91	2.21	0.21	-66	46.7
	1210	X		1.2	16.9	16	6.93	2.2	0.21	-67	32.7
	1215	X		1.45	16.9	16.19	6.92	2.21	0.23	-69	28
	1220	X		1.5	16.9	16.32	6.93	2.221	0.15	-71	23.1
	1225	X		1.6	16.9	16.33	6.92	2.2	0.12	-72	20.5
	1230	X		1.9	16.91	15.88	6.92	2.2	0.13	-72	20.3
	1235	X		2.1	16.91	16.14	6.93	2.2	0.11	-73	17
	1240	X		2.2	16.91	15.88	6.92	2.2	0.09	-73	14
	1245	X		2.5	16.91	15.89	6.92	2.2	0.1	-73	8.55
	1250	X		2.75	16.91	15.84	6.92	2.2	0.05	-74	6.52
	1255	X		2.85	16.91	16	6.92	2.2	0.05	-75	5.96
	1300	X		3	16.91	16.09	6.91	2.2	0.04	-75	5.27
	1305	X		3.15	16.91	16.11	6.91	2.2	0.04	-76	4.67
	1310	X		3.25	16.92	16.11	6.91	2.19	0.04	-75	4.48
	1315		X	3.5	16.92	15.86	6.91	2.19	0.04	-75	4.44

Analysis/Parameter	Container/Volume	Preservative/Preparation
Radionuclides	2 - 1 L Plastic	HNO3
Dissolved Metals	1 - 250 mL Plastic	HNO3
Total Metals	1 - 1 L Plastic	HNO3
Gross Alpha/Beta	1 - 500 mL Plastic	HNO3

Analysis/Parameter	Container/Volume	Preservative/Preparation
PAH	2 - 1L Amber	None
Dioxin	2 - 1L Amber	None
PCBs	2 - 1L Amber	None

Water Quality Meter Calibration
Comments:

Most Recent Calibration:	
Date	12/16/2014
Time	830
Meter	Horiba U-50

Standard	Reading
pH 7.00	7.00
pH 4.00	4.00
pH 10.00	10.00

Standard	Reading
Cond 4.49	4.49



## Environmental Resources Management Low Flow Groundwater Sampling Field Data form

Project: Former Reid Hospital  
 Project Number: \_\_\_\_\_  
 Date: 6/20/2016  
 Samplers: C Burrows  
 Well Screened Interval: 16 - 26'

Well ID: MW-6  
 Well Diameter: 2"  
 Static Water Level: 16.48'  
 Measured Well Depth: 26'  
 Pump Intake Depth: 21'

Purge/Sampling Method: Bladder Pump  
 Stabilization Equipment: Horiba/LaMotte  
 Comments: \_\_\_\_\_

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/20/16	1135	X		0.1	16.43	19.50	NA	7.70	NA	0.933	NA	0.93	NA	7.0	NA	1032.0	NA
	1140	X		0.2	16.43	21.03	NA	7.70	NA	0.950	NA	0.91	NA	-22.0	NA	846.0	NA
	1145	X		0.3	16.43	22.08	FALSE	7.70	TRUE	0.952	TRUE	0.99	TRUE	-28.0	FALSE	770.0	FALSE
	1150	X		0.4	16.43	22.89	FALSE	7.72	TRUE	0.949	TRUE	1.02	FALSE	-40.0	FALSE	486.0	FALSE
	1155	X		0.5	16.43	22.87	FALSE	7.75	TRUE	0.946	TRUE	1.20	FALSE	-41.0	FALSE	364.0	FALSE
	1200	X		0.6	16.43	22.42	TRUE	7.80	TRUE	0.945	TRUE	1.42	FALSE	-36.0	TRUE	277.0	FALSE
	1205	X		0.7	16.43	22.13	FALSE	7.83	TRUE	0.949	TRUE	1.58	FALSE	-30.0	FALSE	187.0	FALSE
	1210	X		0.8	16.43	22.03	TRUE	7.83	TRUE	0.957	TRUE	1.73	FALSE	-24.0	FALSE	124.0	FALSE
	1215	X		0.9	16.43	22.01	TRUE	7.86	TRUE	0.956	TRUE	1.88	FALSE	-17.0	FALSE	107.0	FALSE
	1220	X		1	16.43	21.65	TRUE	7.88	TRUE	0.959	TRUE	2.05	FALSE	-4.0	FALSE	94.9	FALSE
	1225	X		1.1	16.43	21.32	FALSE	7.91	TRUE	0.961	TRUE	2.48	FALSE	12.0	FALSE	86.5	FALSE
	1230	X		1.2	16.43	20.79	FALSE	7.94	TRUE	0.962	TRUE	3.05	FALSE	24.0	FALSE	73.8	FALSE
	1235	X		1.3	16.43	19.71	FALSE	7.95	TRUE	0.965	TRUE	4.10	FALSE	59.0	FALSE	61.9	FALSE
	1240	X		1.4	16.43	18.29	FALSE	7.94	TRUE	0.980	TRUE	3.91	FALSE	71.0	FALSE	44.0	FALSE
	1245	X		1.5	16.43	17.94	FALSE	7.94	TRUE	0.986	TRUE	3.56	FALSE	67.0	FALSE	33.8	FALSE
	1250	X		1.6	16.43	17.58	FALSE	7.93	TRUE	0.992	TRUE	3.64	TRUE	68.0	TRUE	31.7	FALSE
	1255	X		1.7	16.43	17.52	TRUE	7.94	TRUE	0.995	TRUE	3.67	TRUE	72.0	TRUE	28.8	FALSE
	1300	X		1.8	16.43	17.51	TRUE	7.94	TRUE	0.996	TRUE	3.68	TRUE	71.0	TRUE	23.7	FALSE
	1305	X		1.9	16.43	17.50	TRUE	7.93	TRUE	0.997	TRUE	3.69	TRUE	70.0	TRUE	17.1	FALSE
	1310	X		2	16.43	17.55	TRUE	7.93	TRUE	0.998	TRUE	3.59	TRUE	67.0	TRUE	11.7	FALSE
	1315	X		2.1	16.43	17.30	TRUE	7.93	TRUE	1.000	TRUE	3.62	TRUE	69.0	TRUE	9.4	FALSE
	1320	X		2.2	16.43	17.17	TRUE	7.93	TRUE	1.000	TRUE	3.86	TRUE	68.0	TRUE	6.9	FALSE
	1325		X	2.3	16.43	17.20	TRUE	7.93	TRUE	1.000	TRUE	3.84	TRUE	69.0	TRUE	4.8	FALSE

Stabilization Criteria      ± 3%                      ± 0.1                      ± 3%                      ± 10%                      ± 10 mV                      ± 10%

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

**Laboratory City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Total Metals	1 x 1 L Plastic	HNO3
Field Filtered Metals	1 x 250 mL Plastic	HNO3
Radionuclides	2 x 1 L Plastic	HNO3
Gross alpha/beta	1 x 500 mL Plastic	HNO3

Analysis/Parameter	Container/Volume	Preservative/Preparation
PAHs	2 x 1 L Amber	None
Dioxins	2 x 1 L Amber	None

Water Quality Meter Calibration
Comment: _____

Most Recent Calibration:	
Date	6/20/2016
Time	1000
Meter	Horiba/LaMotte

Standard	Reading
pH 4	4.01
pH 7	7.0

Standard	Reading





## Environmental Resources Management Low Flow Groundwater Sampling Field Data form

Project: Former Reid Hospital  
 Project Number: 0315592  
 Date: 6/20/2016  
 Samplers: C Burrows  
 Well Screened Interval: 7-12'

Well ID: MW-7  
 Well Diameter: 2"  
 Static Water Level: 10.86'  
 Measured Well Depth: 12'  
 Pump Intake Depth: 21'

Purge/Sampling Method: Bladder Pump  
 Stabilization Equipment: Horiba/LaMotte  
 Comments:

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/20/16	1605	X		0.1	10.95	20.53	NA	8.07	NA	0.881	NA	5.38	NA	-76.0	NA	528.0	NA
	1610	X		0.2	10.95	20.09	NA	7.74	NA	0.904	NA	3.94	NA	-96.0	NA	269.0	NA
	1615	X		0.3	10.95	19.38	FALSE	7.69	FALSE	0.918	FALSE	3.64	FALSE	-105.0	FALSE	198.0	FALSE
	1620	X		0.4	10.95	18.92	FALSE	7.67	TRUE	0.925	TRUE	3.18	FALSE	-111.0	FALSE	130.0	FALSE
	1625	X		0.5	10.95	18.61	FALSE	7.67	TRUE	0.929	TRUE	2.94	FALSE	-113.0	TRUE	71.6	FALSE
	1630	X		0.6	10.95	18.54	TRUE	7.66	TRUE	0.933	TRUE	2.72	FALSE	-112.0	TRUE	45.9	FALSE
	1635	X		0.7	10.95	18.49	TRUE	7.66	TRUE	0.934	TRUE	2.46	FALSE	-111.0	TRUE	21.5	FALSE
	1640	X		0.8	10.95	18.42	TRUE	7.65	TRUE	0.936	TRUE	2.14	FALSE	-111.0	TRUE	11.0	FALSE
	1645	X		0.9	10.95	18.44	TRUE	7.65	TRUE	0.937	TRUE	2.09	FALSE	-109.0	TRUE	7.3	FALSE
	1650		X	1	10.95	18.40	TRUE	7.64	TRUE	0.938	TRUE	2.01	TRUE	-108.0	TRUE	4.5	FALSE

Stabilization Criteria      ± 3%                      ± 0.1                      ± 3%                      ± 10%                      ± 10 mV                      ± 10%

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

**Laboratory City/State**

Analysis/Parameter	Container/Volume	Preservative/Preparation
Total Metals	1 x 1 L Plastic	HNO3
Field Filtered Metals	1 x 250 mL Plastic	HNO3
Radionuclides	2 x 1 L Plastic	HNO3
Gross alpha/beta	1 x 500 mL Plastic	HNO3

Analysis/Parameter	Container/Volume	Preservative/Preparation
PAHs	2 x 1 L Amber	None
Dioxins	2 x 1 L Amber	None

Water Quality Meter Calibration
Comment:

Most Recent Calibration:	
Date	6/20/2016
Time	1000
Meter	Horiba/LaMotte

Standard	Reading
pH 4	4.01
pH 7	7.0

Standard	Reading



## Environmental Resources Management Low Flow Groundwater Sampling Field Data Form

Project: <u>Reid Hospital</u>	Well ID: <u>MW-8</u>	Purge/Sampling Method: <u>QED BLADDER PUMP</u>
Project Number: <u>0315592</u>	Well Diameter: <u>2"</u>	Stabilization Equipment: <u>HORIBA U-50</u>
Date: <u>6/21/16</u>	Static Water Level: <u>6.11</u>	Comments: MS/MSD COLLECTED
Samplers: <u>T. McGeary</u>	Measured Well Depth: <u>15'</u>	
Well Screened Interval: <u>5-15'</u>	Pump Intake Depth: <u>11'</u>	

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)		pH (Std. Units)		Specific Conductance (mS/cm)		Dissolved Oxygen (mg/L)		Redox Potential (mV)		Turbidity (NTU)	
						Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample	Reading	Sample
6/21/16	0918	X		0	6.15	21.75	NA	6.40	NA	0.692	NA	2.08	NA	-25.0	NA	2936.0	NA
	0923	X		0.5	6.14	19.03	NA	6.95	NA	0.731	NA	1.40	NA	-97.0	NA	1610.0	NA
	0928	X		1	6.12	18.75	FALSE	7.01	FALSE	0.733	FALSE	0.75	FALSE	-103.0	FALSE	677.0	FALSE
	0933	X		1.5	6.12	18.80	TRUE	7.01	TRUE	0.731	TRUE	0.80	FALSE	-107.0	TRUE	75.0	FALSE
	0938	X		2	6.12	18.76	TRUE	7.03	TRUE	0.730	TRUE	0.60	FALSE	-109.0	TRUE	74.2	FALSE
	0943	X		2.5	6.12	18.75	TRUE	7.04	TRUE	0.729	TRUE	0.43	FALSE	-111.0	TRUE	52.6	FALSE
	0948	X		3	6.12	18.75	TRUE	7.04	TRUE	0.729	TRUE	0.38	FALSE	-112.0	TRUE	32.4	FALSE
	0953	X		3.25	6.12	18.80	TRUE	7.04	TRUE	0.728	TRUE	0.31	FALSE	-113.0	TRUE	23.2	FALSE
	0958	X		3.75	6.12	18.75	TRUE	7.06	TRUE	0.728	TRUE	0.29	FALSE	-114.0	TRUE	19.9	FALSE
	1003	X		4.25	6.12	18.83	TRUE	7.06	TRUE	0.727	TRUE	0.24	FALSE	-115.0	TRUE	20.0	FALSE
	1008	X		4.75	6.12	18.76	TRUE	7.06	TRUE	0.729	TRUE	0.20	FALSE	-115.0	TRUE	16.8	FALSE
	1013	X		5.25	6.11	18.85	TRUE	7.07	TRUE	0.728	TRUE	0.18	FALSE	-116.0	TRUE	14.8	FALSE
	1018	X		5.75	6.11	18.91	TRUE	7.06	TRUE	0.728	TRUE	0.15	FALSE	-117.0	TRUE	13.8	FALSE
	1023	X		6.25	6.12	18.92	TRUE	7.06	TRUE	0.726	TRUE	0.16	FALSE	-117.0	TRUE	12.6	FALSE
	1028	X		6.75	6.12	18.87	TRUE	7.07	TRUE	0.725	TRUE	0.13	FALSE	-117.0	TRUE	8.64	FALSE
	1033	X		7.25	6.12	18.84	TRUE	7.07	TRUE	0.726	TRUE	0.11	FALSE	-118.0	TRUE	7.74	FALSE
	1038	X		7.75	6.12	18.81	TRUE	7.07	TRUE	0.726	TRUE	0.12	FALSE	-118.0	TRUE	7.52	FALSE
	1043	X		8.25	6.12	18.91	TRUE	7.08	TRUE	0.725	TRUE	0.09	FALSE	-118.0	TRUE	7.92	TRUE
	1048	X		8.75	6.12	18.86	TRUE	7.08	TRUE	0.725	TRUE	0.09	FALSE	-118.0	TRUE	13.40	FALSE
	1053	X		9.25	6.12	18.83	TRUE	7.08	TRUE	0.724	TRUE	0.10	FALSE	-119.0	TRUE	14.0	FALSE
	1058		X	9.75	6.12	18.92	TRUE	7.09	TRUE	0.725	TRUE	0.08	FALSE	-119.0	TRUE	13.5	TRUE

Stabilization Criteria      ± 3%                      ± 0.1                      ± 3%                      ± 10%                      ± 10 mV                      ± 10%

Note: "True" Values indicate that parameter has achieved stabilization criteria specified in IDEM's "The Micro-Purge Sampling Option" June 3, 1998 (November 3, 2009 Revision)

Analysis/Parameter	Container/Volume	Preservative/Preparation
RADIONUCLIDES	2 - 1L PLASTIC	HNO3
GROSS ALPHA/BETA	2 - 500mL PLASTIC	HNO3
DISSOLVED METALS	2 - 250mL PLASTIC	HNO3
TOTAL METALS	2 - 1L PLASTIC	HNO3

Analysis/Parameter	Container/Volume	Preservative/Preparation
PAH	4 - 1L AMBER	NONE
DIOXIN	4 - 1L AMBER	NONE

Water Quality Meter Calibration
Comments:

Most Recent Calibration:	
Date	6/21/2016
Time	900
Meter	HORIBA U-50

Standard	Reading
pH 7.00	7.00
pH 4.00	4.0
10 NTU	9.98

Standard	Reading
Cond 4.49	4.44
0.0 NTU	0.15
1.0 NTU	1.01





## Environmental Resources Management Low Flow Groundwater Sampling Field Data Form

Project: Reid Hospital	Well ID: <b>MW-8</b>	Purge/Sampling Method: QED BLADDER PUMP
Project Number: 315592	Well Diameter: 2"	Stabilization Equipment: HORIBA U-50
Date: 6/21/16	Static Water Level:	Comments: MS/MSD COLLECTED
Samplers: T. McGeary	Measured Well Depth: 15'	
Well Screened Interval: 5-15'	Pump Intake Depth: 11'	

Date	Time	Purging	Sampling	Purge Volume (gal)	Depth to Water (ft. BTC)	Temperature (°C)	pH (Std. Units)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
						Reading	Reading	Reading	Reading	Reading	Reading
6/21/16	918	X		0	6.15	21.75	6.4	0.692	2.08	-25	2936
	923	X		0.5	6.14	19.03	6.95	0.731	1.4	-97	1610
	928	X		1	6.12	18.75	7.01	0.733	0.75	-103	677
	933	X		1.5	6.12	18.8	7.01	0.731	0.8	-107	75
	938	X		2	6.12	18.76	7.03	0.73	0.6	-109	74.2
	943	X		2.5	6.12	18.75	7.04	0.729	0.43	-111	52.6
	948	X		3	6.12	18.75	7.04	0.729	0.38	-112	32.4
	953	X		3.25	6.12	18.8	7.04	0.728	0.31	-113	23.2
	958	X		3.75	6.12	18.75	7.06	0.728	0.29	-114	19.9
	1003	X		4.25	6.12	18.83	7.06	0.727	0.24	-115	20
	1008	X		4.75	6.12	18.76	7.06	0.729	0.2	-115	16.8
	1013	X		5.25	6.11	18.85	7.07	0.728	0.18	-116	14.8
	1018	X		5.75	6.11	18.91	7.06	0.728	0.15	-117	13.8
	1023	X		6.25	6.12	18.92	7.06	0.726	0.16	-117	12.6
	1028	X		6.75	6.12	18.87	7.07	0.725	0.13	-117	8.64
	1033	X		7.25	6.12	18.84	7.07	0.726	0.11	-118	7.74
	1038	X		7.75	6.12	18.81	7.07	0.726	0.12	-118	7.52
	1043	X		8.25	6.12	18.91	7.08	0.725	0.09	-118	7.92
	1048	X		8.75	6.12	18.86	7.08	0.725	0.09	-118	13.4
	1053	X		9.25	6.12	18.83	7.08	0.724	0.1	-119	14
	1058		X	9.75	6.12	18.92	7.09	0.725	0.08	-119	13.5

Analysis/Parameter	Container/Volume	Preservative/Preparation
RADIONUCLIDES	2 - 1L PLASTIC	HNO3
GROSS ALPHA/BETA	2 - 500mL PLASTIC	HNO3
DISSOLVED METALS	2 - 250mL PLASTIC	HNO3
TOTAL METALS	2 - 1L PLASTIC	HNO3

Analysis/Parameter	Container/Volume	Preservative/Preparation
PAH	4 - 1L AMBER	NONE
DIOXIN	4 - 1L AMBER	NONE

Water Quality Meter Calibration
Comments:

Most Recent Calibration:	
Date	6/21/2016
Time	900
Meter	HORIBA U-50

Standard	Reading
pH 7.00	7.00
pH 4.00	4.00
10 NTU	9.98

Standard	Reading
Cond 4.49	4.44
0.0 NTU	0.15
1.0 NTU	1.01

*Appendix E*  
*CN Associates Radiological Field*  
*Screening Report*



PO Box 1446  
Manchester, MA 01944

978-526-1973  
CNassociates.net

July 21, 2016

Mr. Aaron Friedrich  
Project Manager  
Environmental Resources Management, Inc.  
8425 Woodfield Crossing Boulevard, Suite 560 West  
Indianapolis, Indiana 46240

Re: Final Report for Radiological Surveys Conducted at the former Reid Memorial Hospital, Richmond, Indiana

Dear Aaron:

C. N. Associates, Inc. (C. N. Associates) was contracted by Environmental Resources Management, Inc. (ERM) to conduct radiological screening surveys of areas targeted for collection of soil and groundwater samples for laboratory analysis and screening of the soil samples prior to lab analysis. This letter and the associated attachment constitutes the final report for that screening.

Background:

As C. N. Associates understands:

- The hospital operated from approximately 1903 – 2008, and had two radiological licenses that were terminated with approved termination surveys
- Isotopes known from the previous NRC licenses included Cobalt-57, Cobalt-60, Cesium-137, Iodine 125, and Barium-133
- Previous investigations identified isotopes seen in groundwater of previous evaluations by others that included Gross alpha/beta, bismuth-214, lead-212, lead-214, Potassium-40, radium-226, radium-228, thallium-208, thallium-234, thorium-234, and uranium-235;
- Gross alpha analysis indicated that the EPA drinking water standard of 15 pCi/L was exceeded for groundwater samples collected from locations SB-6 thru SB-14.
- No soil samples were collected for radiological analysis prior to this investigation

Summary of C.N. Associates Work Activities

A C. N. Associates American Board of Health Physics Certified Health Physicist (CHP) reviewed the isotopic history provided by ERM and determined the radiological survey equipment appropriate for this activity with considerations for emission type and half-life.

On 06-13-2016 a C.N. Associates, Inc. ANSI 3.1 Senior Radiation Protection Technician (SRPT) arrived at the former Reid Hospital site with the selected radiological survey equipment calibrated in accordance with manufacturer's recommendations.

Over the period of three days (06-13-2016 – 06-15-2016) the following actions were taken by the C.N. SRPT:

- Consulted daily with a C. N. CHP regarding the work activity and radiological survey results
- Held pre-job briefings with sampling personnel

PO Box 1446  
Manchester, MA 01944

978-526-1973  
CNassociates.net

- Conducted daily pre-operational checks of radiological survey instruments using radioactive test sources
- Collected background radiation readings
- Conducted radiological measurements of the incoming (pre-use) vehicle and equipment (Geoprobe)
- Conducted radiological measurements on twenty-one (22) core bore samples
- Conducted radiological measurements on three (3) sample coolers containing the samples for shipment for laboratory analysis
- Conducted radiological measurements of the outgoing (post-use) vehicle and equipment (Geoprobe)

Summary of Radiological Survey Results

- Removable Contamination
  - No detectable removable alpha, beta, or gamma contamination was detected in any of the measurements taken during this survey
- Direct Radiation Readings
  - All direct radiation readings for alpha, beta, or gamma radiation were indistinguishable from background radiation levels (applicable background readings are provided on the attached radiological survey)

Attachments

1. CN Survey Form TF-001 Survey of Former Reid Hospital Core Bore Samples and Sampling Equipment

Charles Quinn, C. N. Associates ANSI 3.1 Senior Health Physics Technician

 \_\_\_\_\_  
Signature Date 21 July 2016

Donald Flahardy, C. N. Associates Certified Health Physicist

 \_\_\_\_\_  
Signature Date 21 July 2016

Survey of core bore samples at former Reid Hospital at 1401 Chester Blvd, Richmond Indiana.

Boring	
Sample #	Date
SB 30	6/13/2016
SB 28	6/13/2016
SB 29	6/13/2016
SB 31	6/14/2016
SB 23	6/14/2016
SB 32	6/14/2016
SB 26	6/14/2016
SB 20	6/14/2016
SB 22	6/14/2016
SB 24	6/14/2016
SB 33	6/14/2016
SB 27	6/14/2016
SB 34	6/14/2016
SB 25	6/14/2016
SB 19	6/15/2016
SB 17	6/15/2016
SB 18	6/15/2016
SB 21	6/15/2016
SB 35	6/15/2016
SB 16	6/15/2016
SB 36	6/15/2016

Survey of all samples listed above had no detectable levels above the instrument backgrounds listed below for both alpha and beta/gamma.

\*\*\*BACKGROUND FOR 2221 IS 7263 CPM  
\*BACKGROUND FOR INSTRUMENT IS 0 CPM ALPHA, AND 211 CPM BETA/GAMMA  
\*\* BACKGROUND FOR 26-1 IS 8 to 10 MICROR/HR

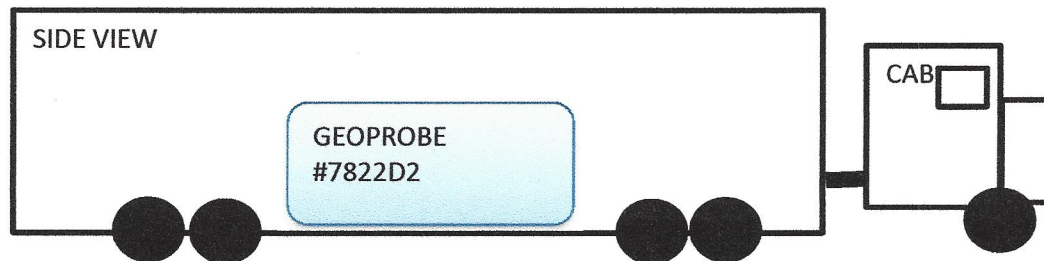
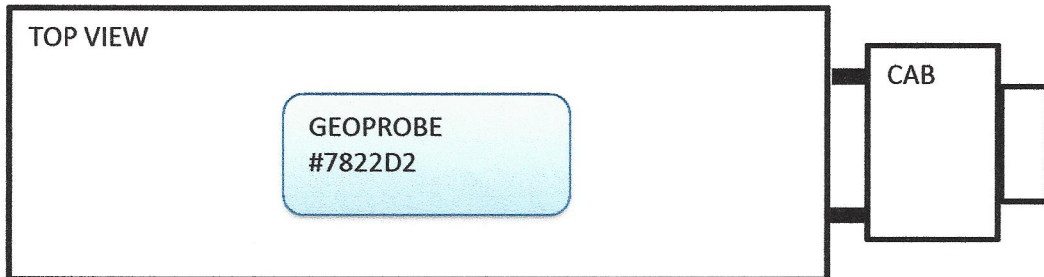
MAKE	MODEL	S/N	CAL DUE	BKG CPM
LUDLUM	26-1	6227	3/11/17	** 8-10
LUDLUM	2360/43-93	319914/PR35435	3/11/17	* 0/211
LUDLUM	2221/4410	314005/PR329134	2/4/17	***7263
NA	NA	NA	NA	NA

HPT Name/Sign C QUINN/ [Signature] Date: 6/15/16  
 HPT Name/Sign N/A Date:  
 Reviewed by Name/Sign Donald Flaherty/DF Date: 21 July 2016

Tractor #PLX4406 OHIO

INCOMING EQUIPMENT SURVEY

Trailer N/A



DISC SMEARS AND LARGE AREA SWIPES (LAS) WERE BACKGROUND (BKG) FOR BOTH ALPHA AND BETA/GAMMA.  
20 DISC SMEARS WERE TAKEN ON TRUCK AND EQUIPMENT.

\*BACKGROUND FOR INSTRUMENT IS 0 CPM ALPHA, AND 211 CPM BETA/GAMMA

MAKE	MODEL	S/N	CAL DUE	BKG CPM
LUDLUM	2360/43-93	319914/PR35435	3/11/17	* 0/211
	N			
		A		

HPT Name/Sign C QUINN/

Date: 13 JUNE 16

Waste Package Specialist Name N/A

Date:

Reviewed by Name/Sign

*Donald Flaherty / [Signature]*

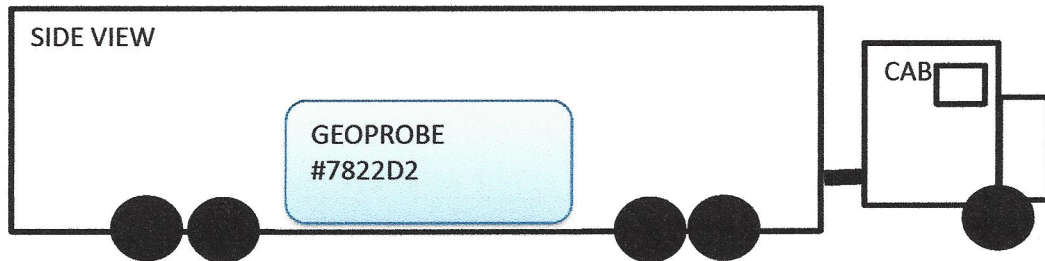
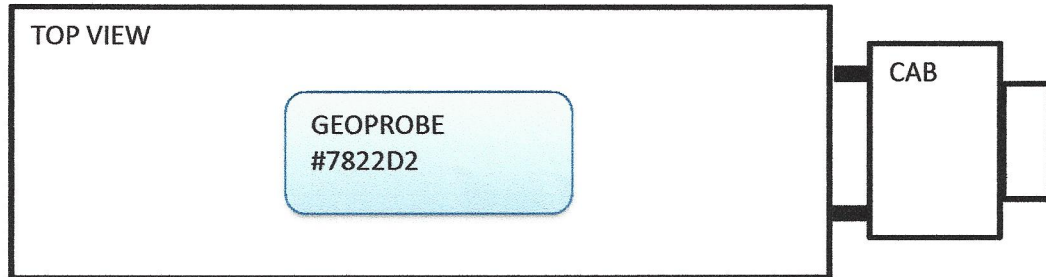
Date: 21 July 2016



Tractor #PLX4406 OHIO

OUTGOING EQUIPMENT SURVEY

Trailer N/A



DISC SMEARS AND LARGE AREA SWIPES (LAS) WERE BACKGROUND (BKG) FOR BOTH ALPHA AND BETA/GAMMA.  
20 DISC SMEARS WERE TAKEN ON TRUCK AND EQUIPMENT.

\*BACKGROUND FOR INSTRUMENT IS 0 CPM ALPHA, AND 211 CPM BETA/GAMMA

MAKE	MODEL	S/N	CAL DUE	BKG CPM
LUDLUM	2360/43-93	319914/PR35435	3/11/17	* 0/211
	N			
		A		

HPT Name/Sign C QUINN/

*CL 2*

Date: 15 JUNE 16

Waste Package Specialist Name N/A

Date:

Reviewed by Name/Sign

*Donald Flaherty / DF*

Date: 21 July 2016

Sample coolers #1,#2,#3 surveyed for shipment to lab.No detectable activity found for alpha or beta-gamma. Smears 1-18 taken on coolers,all smears were background with the Ludlum 2360.Dose rates on coolers with with samples 8-10 micro R/HR with the 26-1 which was background for this instrument.

\*\*\*BACKGROUND FOR 2221 IS 7263 CPM

\*BACKGROUND FOR INSTRUMENT IS 0 CPM ALPHA, AND 211 CPM BETA/GAMMA

\*\* BACKGROUND FOR 26-1 IS 8 to 10 MICROR/HR

MAKE	MODEL	S/N	CAL DUE	BKG CPM
LUDLUM	26-1	6227	3/11/17	** 8-10
LUDLUM	2360/43-93	319914/PR35435	3/11/17	* 0/211
LUDLUM	2221/4410	314005/PR329134	2/4/17	***7263
NA	NA	NA	NA	NA

HPT Name/Sign C QUINN/  Date: 6/15/16

HPT Name/Sign N/A Date:

Reviewed by Name/Sign Donald Flahardy/  Date: 21 July 2016



*Appendix F*  
*Laboratory Analytical Reports*

July 13, 2016

Mr. Aaron Friedrich  
ERM, Inc.  
8425 Woodfield Crossing Blvd  
Suite 560-W  
Indianapolis, IN 46240

RE: Project: Former Reid Hospital  
Pace Project No.: 50149130

Dear Mr. Friedrich:

Enclosed are the analytical results for sample(s) received by the laboratory on July 08, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kenneth Hunt  
kenneth.hunt@pacelabs.com  
Project Manager

Enclosures

cc: Ms. Meghan Eschbaugh@erm.com, ERM



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: Former Reid Hospital  
Pace Project No.: 50149130

---

### Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268  
Illinois Certification #: 200074  
Indiana Certification #: C-49-06  
Kansas/NELAP Certification #:E-10177  
Kentucky UST Certification #: 0042  
Kentucky WW Certification #:98019

Ohio VAP Certification #: CL-0065  
Oklahoma Certification #: 2014-148  
Texas Certification #: T104704355-15-9  
West Virginia Certification #: 330  
Wisconsin Certification #: 999788130  
USDA Soil Permit #: P330-10-00128

---

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Former Reid Hospital

Pace Project No.: 50149130

Lab ID	Sample ID	Matrix	Date Collected	Date Received
50149130001	West Incinerator 20160707-01	Wipe	07/07/16 14:20	07/08/16 08:40
50149130002	Center Incinerator 20160707-01	Wipe	07/07/16 14:25	07/08/16 08:40
50149130003	East Incinerator 20160707-01	Wipe	07/07/16 14:30	07/08/16 08:40

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Former Reid Hospital  
Pace Project No.: 50149130

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
50149130001	West Incinerator 20160707-01	EPA 8082	NPW	8	PASI-I
50149130002	Center Incinerator 20160707-01	EPA 8082	NPW	8	PASI-I
50149130003	East Incinerator 20160707-01	EPA 8082	NPW	8	PASI-I

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Former Reid Hospital

Pace Project No.: 50149130

**Sample: West Incinerator 20160707-01**    **Lab ID: 50149130001**    Collected: 07/07/16 14:20    Received: 07/08/16 08:40    Matrix: Wipe

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082 GCS PCB Wipes</b>									
Analytical Method: EPA 8082    Preparation Method: EPA 3580 (Wipe)									
PCB-1016 (Aroclor 1016)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:38	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:38	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:38	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:38	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:38	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:38	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:38	11096-82-5	
<b>Surrogates</b>									
Tetrachloro-m-xylene (S)	96	%.	33-129		1	07/11/16 11:10	07/11/16 17:38	877-09-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Former Reid Hospital

Pace Project No.: 50149130

**Sample:** Center Incinerator 20160707-01      **Lab ID:** 50149130002      Collected: 07/07/16 14:25      Received: 07/08/16 08:40      Matrix: Wipe

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082 GCS PCB Wipes</b>									
Analytical Method: EPA 8082 Preparation Method: EPA 3580 (Wipe)									
PCB-1016 (Aroclor 1016)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:46	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:46	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:46	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:46	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:46	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:46	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:46	11096-82-5	
<b>Surrogates</b>									
Tetrachloro-m-xylene (S)	91	%.	33-129		1	07/11/16 11:10	07/11/16 17:46	877-09-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Former Reid Hospital

Pace Project No.: 50149130

**Sample:** East Incinerator 20160707-01    **Lab ID:** 50149130003    Collected: 07/07/16 14:30    Received: 07/08/16 08:40    Matrix: Wipe

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082 GCS PCB Wipes</b>									
Analytical Method: EPA 8082 Preparation Method: EPA 3580 (Wipe)									
PCB-1016 (Aroclor 1016)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:54	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:54	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:54	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:54	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:54	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:54	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	Total ug-	1.0	1.0	1	07/11/16 11:10	07/11/16 17:54	11096-82-5	
<b>Surrogates</b>									
Tetrachloro-m-xylene (S)	84	%.	33-129		1	07/11/16 11:10	07/11/16 17:54	877-09-8	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Former Reid Hospital

Pace Project No.: 50149130

QC Batch: 341197

Analysis Method: EPA 8082

QC Batch Method: EPA 3580 (Wipe)

Analysis Description: 8082 GCS PCB Wipe

Associated Lab Samples: 50149130001, 50149130002, 50149130003

METHOD BLANK: 1581319

Matrix: Wipe

Associated Lab Samples: 50149130001, 50149130002, 50149130003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	Total ug-	ND	1.0	1.0	07/11/16 16:57	
PCB-1221 (Aroclor 1221)	Total ug-	ND	1.0	1.0	07/11/16 16:57	
PCB-1232 (Aroclor 1232)	Total ug-	ND	1.0	1.0	07/11/16 16:57	
PCB-1242 (Aroclor 1242)	Total ug-	ND	1.0	1.0	07/11/16 16:57	
PCB-1248 (Aroclor 1248)	Total ug-	ND	1.0	1.0	07/11/16 16:57	
PCB-1254 (Aroclor 1254)	Total ug-	ND	1.0	1.0	07/11/16 16:57	
PCB-1260 (Aroclor 1260)	Total ug-	ND	1.0	1.0	07/11/16 16:57	
Tetrachloro-m-xylene (S)	%.	102	33-129		07/11/16 16:57	

LABORATORY CONTROL SAMPLE: 1581320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	Total ug-	25	21.5	86	31-128	
PCB-1260 (Aroclor 1260)	Total ug-	25	23.7	95	24-124	
Tetrachloro-m-xylene (S)	%.			100	33-129	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Former Reid Hospital

Pace Project No.: 50149130

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-I Pace Analytical Services - Indianapolis

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Former Reid Hospital

Pace Project No.: 50149130

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50149130001	West Incinerator 20160707-01	EPA 3580 (Wipe)	341197	EPA 8082	341249
50149130002	Center Incinerator 20160707-01	EPA 3580 (Wipe)	341197	EPA 8082	341249
50149130003	East Incinerator 20160707-01	EPA 3580 (Wipe)	341197	EPA 8082	341249

### REPORT OF LABORATORY ANALYSIS

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# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

*man*

Page: 1 of 1  
**2046272**

**Section A**  
Required Client Information:

Company: **ERM**  
Address: **8425 Woodfield Crossing Ste 200  
Indianapolis, IN 46240**  
Email To: **Aaron.Friedrich@erm.com**  
Phone: **317-706-2000** Fax: **317-706-2010**  
Requested Due Date/TAT: **Standard**

**Section B**  
Required Project Information:

Report To:  
Copy To:  
Purchase Order No.:  
Project Name: **Former Reid Hospital**  
Project Number:

**Section C**  
Invoice Information:

Attention:  
Company Name:  
Address:  
Pace Quote Reference:  
Pace Project Manager: **Kenneth Hunt**  
Pace Profile #:

**REGULATORY AGENCY**

NPDES  GROUND WATER  DRINKING WATER  
 UST  RCRA  OTHER

Site Location: **IN**  
STATE: **IN**

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB, C=COMP)	COLLECTED		SAMPLER TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Analysis Test ↓	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)
					COMPOSITE START	COMPOSITE END/GRAB			Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	Methanol	Other			
					DATE	TIME			DATE	TIME									
1	West Incinerator	20160707-01	WP	G				1											
2	Center Incinerator	20160707-01	WP	G				1											
3	East Incinerator	20160707-01	WP	G				1											
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	<i>Chris Burnell / ERM</i>	7-8-16	0840	<i>Ken Hunt</i>	7-8-16	840 21	Y N Y

Page 11 of 13

ORIGINAL

**SAMPLER NAME AND SIGNATURE**

PRINT Name of SAMPLER: **Chris Burnell**  
SIGNATURE of SAMPLER: *Chris Burnell*  
DATE Signed (MM/DD/YY): **07/07/16**

Temp in °C  
Received on Ice (Y/N)  
Custody Sealed Cooler (Y/N)  
Samples Intact (Y/N)

\*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

**Sample Condition Upon Receipt**



Client Name: ERM

Project # 50149130

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present:  yes  no      Seals intact:  yes  no

Date/Time 5035A kits placed in freezer  
\_\_\_\_\_

Packing Material:  Bubble Wrap  Bubble Bags  None  Other foam block

Thermometer 1 2 3 4 5 6 A B C D E F      Type of Ice: Wet Blue None  Samples on Ice, cooling process has begun

Cooler Temperature (Initial/Corrected) 2.1/2.1      Ice Visible in Sample Containers:  yes  no

Temp should be above freezing to 6°C

Comments: \_\_\_\_\_  
Date and Initials of person examining contents: NAF 7/8/16

Are samples from West Virginia? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1.	
Document any containers out of temp.		
Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Chain of Custody Filled Out: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Short Hold Time Analysis (<72hr): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.	
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.	
Sample Labels match COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Includes date/time/ID/Analysis		
All containers needing acid/base pres. have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10.	(Circle) HNO3    H2SO4    NaOH    NaOH/ZnAc
exceptions: VOA, coliform, TOC, O&G		
All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted.		
Residual Chlorine Check (SVOC 625 Pest/PCB 608)	11.	Present    Absent
Residual Chlorine Check (Total/Amenable/Free Cyanide)	12.	Present    Absent
Headspace in VOA Vials (>6mm): <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.	
Headspace Wisconsin Sulfide <input type="checkbox"/> Yes <input type="checkbox"/> No	14.	
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.	
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Project Manager Review		
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.	
Sufficient Volume: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.	
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	17.	

Client Notification/ Resolution: \_\_\_\_\_ Field Data Required?    Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Project Manager Review: Kenneth Hunt      Date: 7/8/16

### Sample Container Count

CLIENT: ERM

COC PAGE 1 of 1  
 COC ID# 2046272

Project # 50149130

Sample Line	Item	DG9H	AG1U	WGFU	AG0U	R 4/6	BP2N	BP2U	BP2S	BP3N	BP3U	BP3S	AG3S	AG1H	BP3C	BP1U	SP5T	AG2U	pH <2	pH >9	pH >12	
1																			1			
2																			1			
3																			1			
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

**Container Codes**

DG9H	40mL HCL amber vial	AG0U	100mL unpreserved amber glass	BP1N	1 liter HNO3 plastic	DG9P	40mL TSP amber vial
AG1U	1liter unpreserved amber glass	AG1H	1 liter HCL amber glass	BP1S	1 liter H2SO4 plastic	DG9S	40mL H2SO4 amber vial
WGFU	4oz clear soil jar	AG1S	1 liter H2SO4 amber glass	BP1U	1 liter unpreserved plastic	DG9T	40mL Na Thio amber vial
R	terra core kit	AG1T	1 liter Na Thiosulfate amber glass	BP1Z	1 liter NaOH, Zn, Ac	DG9U	40mL unpreserved <b>amber</b> vial
BP2N	500mL HNO3 plastic	AG2N	500mL HNO3 amber glass	BP2A	500mL NaOH, Asc Acid plastic	SP5T	120mL Coliform Na Thiosulfate
BP2U	500mL unpreserved plastic	AG2S	500mL H2SO4 amber glass	BP2O	500mL NaOH plastic	JGFU	4oz unpreserved amber wide
BP2S	500mL H2SO4 plastic	AG2U	500mL unpreserved amber glass	BP2Z	500mL NaOH, Zn Ac	U	Summa Can
BP3N	250mL HNO3 plastic	AG3U	250mL unpreserved amber glass	AF	Air Filter	VG9H	40mL HCL clear vial
BP3U	250mL unpreserved plastic	BG1H	1 liter HCL clear glass	BP3C	250mL NaOH plastic	VG9T	40mL Na Thio. clear vial
BP3S	250mL H2SO4 plastic	BG1S	1 liter H2SO4 clear glass	BP3Z	250mL NaOH, Zn Ac plastic	VG9U	40mL unpreserved <b>clear</b> vial
AG3S	250mL H2SO4 glass amber	BG1T	1 liter Na Thiosulfate clear glass	C	Air Cassettes	VSG	Headspace septa vial & HCL
AG1S	1 liter H2SO4 amber glass	BG1U	1 liter unpreserved glass	DG9B	40mL Na Bisulfate amber vial	WGFU	4oz wide jar w/hexane wipe
BP1U	1 liter unpreserved plastic	BP1A	1 liter NaOH, Asc Acid plastic	DG9M	40mL MeOH clear vial	ZPLC	Ziploc Bag

Analytical Data Package Prepared For  
**TESTAMERICA ST. LOUIS**

Radiochemical Analysis By  
**TestAmerica Inc**

*2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.*

Assigned Laboratory Code: TA-RL

Data Package Contains 42 Pages

Report No.: 69142

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
51703		DUP-A(160-17824-19)	J6G070440-16	M8WNL1AA	9M8WNL10	6190034
		DUP-B(160-17824-29)	J6G070440-25	M8WNX1AA	9M8WNX10	6190034
		SB-16(0-2')(160-17824-23)	J6G070440-19	M8WNP1AA	9M8WNP10	6190034
		SB-16(8-12')(160-17824-24)	J6G070440-20	M8WNP1AA	9M8WNP10	6190034
		SB-17(0-2')(160-17824-28)	J6G070440-24	M8WNP1AA	9M8WNP10	6190034
		SB-17(16-20')(160-17824-26)	J6G070440-22	M8WNT1AA	9M8WNT10	6190034
		SB-18(0-2')(160-17824-25)	J6G070440-21	M8WNR1AA	9M8WNR10	6190034
		SB-18(16-20')(160-17824-27)	J6G070440-23	M8WNV1AA	9M8WNV10	6190034
		SB-19(0-2')(160-17824-3)	J6G070440-1	M8WM41AA	9M8WM410	6190033
		SB-19(8-12')(160-17824-10)	J6G070440-8	M8WNC1AA	9M8WNC10	6190033
		SB-22(0-2')(160-17824-20)	J6G070440-17	M8WNC1AA	9M8WNC10	6190033
		SB-22(16-20')(160-17824-18)	J6G070440-15	M8WNM1AA	9M8WNM10	6190034
		SB-23(1-2')(160-17824-15)	J6G070440-12	M8WNK1AA	9M8WNK10	6190034
		SB-23(12-16')(160-17824-12)	J6G070440-9	M8WNG1AA	9M8WNG10	6190033
		SB-24(0-2')(160-17824-4)	J6G070440-2	M8WND1AA	9M8WND10	6190033
		SB-24(12-16')(160-17824-5)	J6G070440-3	M8WM51AA	9M8WM510	6190033
		SB-25(0-2')(160-17824-9)	J6G070440-7	M8WM61AA	9M8WM610	6190033
		SB-25(12-16')(160-17824-6)	J6G070440-4	M8WNA1AA	9M8WNA10	6190033
		SB-26(0-2')(160-17824-16)	J6G070440-13	M8WM71AA	9M8WM710	6190033
		SB-26(12-16')(160-17824-14)	J6G070440-11	M8WNH1AA	9M8WNH10	6190034
	SB-27(0-2')(160-17824-8)	J6G070440-6	M8WNF1AA	9M8WNF10	6190033	
	SB-27(18-22')(160-17824-7)	J6G070440-5	M8WM91AA	9M8WM910	6190033	
	SB-28(0-2')(160-17824-13)	J6G070440-10	M8WM81AA	9M8WM810	6190033	
			M8WNE1AA	9M8WNE10	6190033	

**Report No.: 69142**

**Results in this report relate only to the sample(s) analyzed.**

<b>SDG No.</b>	<b>Order No.</b>	<b>Client Sample ID (List Order)</b>	<b>Lot-Sa No.</b>	<b>Work Order</b>	<b>Report DB ID</b>	<b>Batch No.</b>
<b>51703</b>		<b>SB-28(17-20')(160-17824-17)</b>	<b>J6G070440-14</b>	<b>M8WNJ1AA</b>	<b>9M8WNJ10</b>	<b>6190034</b>
		<b>SB-35(0-2')(160-17824-22)</b>	<b>J6G070440-18</b>	<b>M8WNN1AA</b>	<b>9M8WNN10</b>	<b>6190034</b>



## Certificate of Analysis

August 11, 2016

TestAmerica St. Louis  
13715 Rider Trail North  
Earth City, MO 63045

Attention: Elizabeth Hoerchler

---

Date Received in Lab	:	June 30, 2016
Sample Type	:	Twenty Five (25) Solid
SDG Number	:	51703
Job Number	:	160-17824-1
Project Number/Name	:	Former Reid Hospital Site/16005365

---

### CASE NARRATIVE

#### **I. Introduction**

On June 30, 2016, twenty five solid samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt the samples were assigned to Lot Number J6G070440 with the laboratory ID number corresponding to the client ID as shown on the cover page.

#### **II. Sample Receipt**

The samples were received in good condition no anomalies were noted upon check-in.

#### **III. Analytical Results/Methodology**

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

**Alpha Scintillation Counting**  
Radium-226 by method RL-RA-001 ( EPA 903.1)

**IV. Quality Control**

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

**V. Comments**

**Alpha Scintillation Counting**


Radium-226 by method RL-RA-001:

The samples were processed in two analytical batches; 6190033 and 6190034.

The LCS, batch blank, samples and sample duplicate results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

 **Erika Jordan**  
**2016.08.11**  
**09:52:31 -07'00'**

---

Erika Jordan  
Manager of Project Management

## Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	TestAmerica Richland's SOP No.
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

**Results in this report relate only to the sample(s) analyzed.**

### Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship,  $R = \text{constants} * f(x,y,z,...)$ . The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties ( $u_i$ ) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty ( $u_c$ ) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ( $S/\sqrt{n}$ ), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

## Report Definitions

<b>Action Lev</b>	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
<b>Batch</b>	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
<b>Bias</b>	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or TestAmerica.
<b>Count Error (#s)</b>	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
<b>CSU (#s) <i>u<sub>c</sub> Combined Standard Uncert.</i></b>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u<sub>c</sub> the combined standard uncertainty</i> . The uncertainty is absolute and in the same units as the result.
<b>(#s), Coverage Factor</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
<b>CRDL (RL)</b>	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
<b>Lc</b>	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \sqrt{2 * (BkgrndCnt / BkgrndCntMin) / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
<b>Lot-Sample No</b>	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
<b>MDC MDA MDL</b>	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \sqrt{((BkgrndCnt / BkgrndCntMin) / SCntMin) + 2.71 / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . For LSC methods the batch blank is used as a measure of the background variability.
<b>Primary Detector</b>	The instrument identifier associated with the analysis of the sample aliquot.
<b>Ratio U-234/U-238</b>	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
<b>Rst/MDC</b>	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Rst/TotUcert</b>	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Report DB No</b>	Sample Identifier used by the report system. The number is based upon the first five digits of the <b>Work Order</b> Number.
<b>RER</b>	The equation Replicate Error Ratio = $(S-D) / [\sqrt{TPUs^2 + TPUd^2}]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
<b>SDG</b>	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
<b>Sum Rpt Alpha Spec Rst(s)</b>	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
<b>Work Order</b>	The LIMS software assign test specific identifier.
<b>Yield</b>	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

# Sample Results Summary

Date: 11-Aug-16

## TestAmerica Inc TA-RL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 69142

SDG No: 51703

Batch	Client Id Work Order	Parameter	Result +- CSU ( 2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
<b>6190033 RL-RA-001</b>									
	<b>SB-19(0-2')(160-17824-3)</b>								
	M8WM41AA	RADIUM-226	5.56E-01 +- 1.7E-01		PCI_G	89%	1.25E-01	1.00E+00	
	<b>SB-19(0-2')(160-17824-3) DUP</b>								
	M8WM41AC	RADIUM-226	5.42E-01 +- 1.4E-01		PCI_G	84%	9.08E-02	1.00E+00	0.1
	<b>SB-19(8-12')(160-17824-10)</b>								
	M8WNC1AA	RADIUM-226	4.36E-01 +- 1.4E-01		PCI_G	93%	8.78E-02	1.00E+00	
	<b>SB-23(1-2')(160-17824-15)</b>								
	M8WNG1AA	RADIUM-226	4.48E-01 +- 1.5E-01		PCI_G	84%	1.17E-01	1.00E+00	
	<b>SB-23(12-16')(160-17824-12)</b>								
	M8WND1AA	RADIUM-226	8.77E-02 +- 6.7E-02	U	PCI_G	79%	9.40E-02	1.00E+00	
	<b>SB-24(0-2')(160-17824-4)</b>								
	M8WM51AA	RADIUM-226	4.03E-01 +- 1.4E-01		PCI_G	90%	1.18E-01	1.00E+00	
	<b>SB-24(12-16')(160-17824-5)</b>								
	M8WM61AA	RADIUM-226	4.46E-01 +- 1.6E-01		PCI_G	82%	1.41E-01	1.00E+00	
	<b>SB-25(0-2')(160-17824-9)</b>								
	M8WNA1AA	RADIUM-226	4.47E-01 +- 1.5E-01		PCI_G	74%	1.21E-01	1.00E+00	
	<b>SB-25(12-16')(160-17824-6)</b>								
	M8WM71AA	RADIUM-226	4.94E-01 +- 1.7E-01		PCI_G	73%	1.46E-01	1.00E+00	
	<b>SB-26(12-16')(160-17824-14)</b>								
	M8WNF1AA	RADIUM-226	7.63E-01 +- 2.0E-01		PCI_G	95%	6.97E-02	1.00E+00	
	<b>SB-27(0-2')(160-17824-8)</b>								
	M8WM91AA	RADIUM-226	4.03E-01 +- 1.4E-01		PCI_G	79%	1.25E-01	1.00E+00	
	<b>SB-27(18-22')(160-17824-7)</b>								
	M8WM81AA	RADIUM-226	5.26E-01 +- 1.5E-01		PCI_G	76%	1.23E-01	1.00E+00	
	<b>SB-28(0-2')(160-17824-13)</b>								
	M8WNE1AA	RADIUM-226	5.47E-01 +- 1.7E-01		PCI_G	95%	8.58E-02	1.00E+00	
<b>6190034 RL-RA-001</b>									
	<b>DUP-A(160-17824-19)</b>								
	M8WNL1AA	RADIUM-226	7.28E-01 +- 2.1E-01		PCI_G	99%	9.81E-02	1.00E+00	
	<b>DUP-B(160-17824-29)</b>								
	M8WNX1AA	RADIUM-226	9.58E-01 +- 2.2E-01		PCI_G	84%	9.54E-02	1.00E+00	
	<b>SB-16(0-2')(160-17824-23)</b>								
	M8WNP1AA	RADIUM-226	7.08E-01 +- 1.9E-01		PCI_G	81%	1.03E-01	1.00E+00	
	<b>SB-16(8-12')(160-17824-24)</b>								
	M8WNQ1AA	RADIUM-226	5.02E-01 +- 1.6E-01		PCI_G	90%	9.07E-02	1.00E+00	
	<b>SB-17(0-2')(160-17824-28)</b>								
	M8WNW1A	RADIUM-226	6.20E-01 +- 2.0E-01		PCI_G	89%	1.31E-01	1.00E+00	
	<b>SB-17(16-20')(160-17824-26)</b>								
	M8WNT1AA	RADIUM-226	4.26E-01 +- 1.5E-01		PCI_G	93%	1.02E-01	1.00E+00	

TestAmerica Inc RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPU)s+sq(TPUd))] as defined by ICPT BOA.  
 rptTALRchSaSum U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan  
 mary2 V5.6 A2002 software.

**Sample Results Summary**

Date: 11-Aug-16

**TestAmerica Inc TA-RL**

Ordered by Method, Batch No., Client Sample ID.

Report No. : 69142

SDG No: 51703

Batch	Client Id Work Order	Parameter	Result +- CSU ( 2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
6190034	RL-RA-001								
	<b>SB-18(0-2')(160-17824-25)</b>								
	M8WNR1AA	RADIUM-226	4.20E-01 +- 1.2E-01		PCI_G	100%	7.91E-02	1.00E+00	
	<b>SB-18(16-20')(160-17824-27)</b>								
	M8WNV1AA	RADIUM-226	5.00E-01 +- 1.7E-01		PCI_G	74%	1.49E-01	1.00E+00	
	<b>SB-22(0-2')(160-17824-20)</b>								
	M8WNM1A	RADIUM-226	7.76E-01 +- 2.2E-01		PCI_G	85%	1.57E-01	1.00E+00	
	<b>SB-22(16-20')(160-17824-18)</b>								
	M8WNK1AA	RADIUM-226	9.82E-01 +- 2.8E-01		PCI_G	86%	1.27E-01	1.00E+00	
	<b>SB-26(0-2')(160-17824-16)</b>								
	M8WNH1AA	RADIUM-226	7.18E-01 +- 2.0E-01		PCI_G	84%	1.10E-01	1.00E+00	
	<b>SB-26(0-2')(160-17824-16) DUP</b>								
	M8WNH1AC	RADIUM-226	9.22E-01 +- 2.7E-01		PCI_G	77%	1.43E-01	1.00E+00	1.2
	<b>SB-28(17-20')(160-17824-17)</b>								
	M8WNJ1AA	RADIUM-226	5.33E-01 +- 1.6E-01		PCI_G	85%	8.58E-02	1.00E+00	
	<b>SB-35(0-2')(160-17824-22)</b>								
	M8WNN1AA	RADIUM-226	6.80E-01 +- 2.1E-01		PCI_G	100%	1.22E-01	1.00E+00	
	<b>No. of Results:</b>	27							

TestAmerica Inc RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPU<sub>s</sub>)+sq(TPU<sub>d</sub>))] as defined by ICPT BOA.

rptTALRchSaSum  
mary2 V5.6 A2002

**QC Results Summary**  
**TestAmerica Inc TA-RL**  
 Ordered by Method, Batch No, QC Type,.

Date: 11-Aug-16

Report No. : 69142

SDG No.: 51703

Batch	Work Order	Parameter	Result +- CSU ( 2 s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
<b>RL-RA-001</b>									
6190033	BLANK QC,								
	M8WR01AA	RADIUM-226	3.99E-02 +- 5.2E-02	U	PCI_G	96%			8.53E-02
6190033	LCS,								
	M8WR01AC	RADIUM-226	6.45E-01 +- 6.1E-01		PCI_G	90%	95%	0.0	1.49E-01
<b>RL-RA-001</b>									
6190034	BLANK QC,								
	M8WR21AA	RADIUM-226	7.96E-03 +- 4.2E-02	U	PCI_G	96%			7.35E-02
6190034	LCS,								
	M8WR21AC	RADIUM-226	6.43E-01 +- 1.9E-01		PCI_G	89%	107%	0.1	8.39E-02

No. of Results: 4

TestAmerica Inc Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSummary V5.6 A2002 U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc  
 Lot-Sample No.: J6G070440-16  
 Client Sample ID: DUP-A(160-17824-19)

SDG: 51703  
 Report No. : 69142  
 COC No. :

Collection Date: 6/14/2016  
 Received Date: 6/30/2016 10:15:00 AM  
 Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001			Work Order: M8WNL1AA		Report DB ID: 9M8WNL10						
RADIUM-226	7.28E-01		9.9E-02	2.1E-01	9.81E-02	PCI_G	99%	(7.4)	8/9/16 08:01 p		1.96	ASC5HA
						4.59E-02	1.00E+00	(6.9)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002



**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc  
 Lot-Sample No.: J6G070440-25  
 Client Sample ID: DUP-B(160-17824-29)

SDG: 51703  
 Report No. : 69142  
 COC No. :

Collection Date: 6/15/2016  
 Received Date: 6/30/2016 10:15:00 AM  
 Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WNX1AA		Report DB ID: 9M8WNX10					
RADIUM-226	9.58E-01		1.1E-01	2.2E-01	9.54E-02	PCI_G	84%	(10.)	8/9/16 08:28 p		2.23	ASCGMA
						4.46E-02	1.00E+00	(8.7)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/15/2016 3:45:00 PM

Lot-Sample No.: J6G070440-19

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-16(0-2')(160-17824-23)

COC No. :

Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WNP1AA		Report DB ID: 9M8WNP10					
RADIUM-226	7.08E-01		1.1E-01	1.9E-01	1.03E-01	PCI_G	81%	(6.8)	8/9/16 08:17 p		2.05	ASCASA
							4.79E-02	1.00E+00			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/15/2016 4:10:00 PM

Lot-Sample No.: J6G070440-20

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-16(8-12')(160-17824-24)

COC No. :

Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WNQ1AA		Report DB ID: 9M8WNQ10					
RADIUM-226	5.02E-01		8.5E-02	1.6E-01	9.07E-02	PCI_G	90%	(5.5)	8/9/16 08:28 p		2.15	ASCBMB
						4.23E-02	1.00E+00	(6.4)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

<b>Lab Name:</b> TestAmerica Inc	<b>SDG:</b> 51703	<b>Collection Date:</b> 6/15/2016 10:00:00 AM
<b>Lot-Sample No.:</b> J6G070440-24	<b>Report No. :</b> 69142	<b>Received Date:</b> 6/30/2016 10:15:00 AM
<b>Client Sample ID:</b> SB-17(0-2')(160-17824-28)	<b>COC No. :</b>	<b>Matrix:</b> SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WNW1AA		Report DB ID: 9M8WNW10					
RADIUM-226	<b>6.20E-01</b>		1.1E-01	2.0E-01	1.31E-01	PCI_G	89%	(4.8)	8/9/16 08:28 p		2.1	ASCFAB
						6.20E-02	1.00E+00	(6.2)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

<b>Lab Name:</b> TestAmerica Inc	<b>SDG:</b> 51703	<b>Collection Date:</b> 6/15/2016 10:10:00 AM
<b>Lot-Sample No.:</b> J6G070440-22	<b>Report No. :</b> 69142	<b>Received Date:</b> 6/30/2016 10:15:00 AM
<b>Client Sample ID:</b> SB-17(16-20*)(160-17824-26)	<b>COC No. :</b>	<b>Matrix:</b> SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WNT1AA		Report DB ID: 9M8WNT10					
RADIUM-226	<b>4.26E-01</b>		8.7E-02	1.5E-01	1.02E-01	PCI_G	93%	(4.2)	8/9/16 08:29 p		2.05	ASCDMC
						4.76E-02	1.00E+00	(5.9)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

<b>Lab Name:</b> TestAmerica Inc	<b>SDG:</b> 51703	<b>Collection Date:</b> 6/15/2016 11:05:00 AM
<b>Lot-Sample No.:</b> J6G070440-21	<b>Report No. :</b> 69142	<b>Received Date:</b> 6/30/2016 10:15:00 AM
<b>Client Sample ID:</b> SB-18(0-2')(160-17824-25)	<b>COC No. :</b>	<b>Matrix:</b> SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WNR1AA		Report DB ID: 9M8WNR10					
RADIUM-226	<b>4.20E-01</b>		7.3E-02	1.2E-01	7.91E-02	PCI_G	100%	(5.3)	8/9/16 08:29 p		2.08	ASCCSB
						3.69E-02	1.00E+00	(6.9)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc	SDG: 51703	Collection Date: 6/15/2016 11:40:00 AM
Lot-Sample No.: J6G070440-23	Report No. : 69142	Received Date: 6/30/2016 10:15:00 AM
Client Sample ID: SB-18(16-20*)(160-17824-27)	COC No. :	Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WNV1AA		Report DB ID: 9M8WNV10					
RADIUM-226	5.00E-01		1.1E-01	1.7E-01	1.49E-01	PCI_G	74%	(3.4)	8/9/16 08:28 p		2.21	ASCESD
						7.09E-02	1.00E+00	(5.9)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc  
 Lot-Sample No.: J6G070440-1  
 Client Sample ID: SB-19(0-2')(160-17824-3)

SDG: 51703  
 Report No. : 69142  
 COC No. :

Collection Date: 6/15/2016 9:15:00 AM  
 Received Date: 6/30/2016 10:15:00 AM  
 Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WM41AA		Report DB ID: 9M8WM410					
RADIUM-226	<b>5.56E-01</b>		1.0E-01	1.7E-01	1.25E-01	PCI_G	89%	(4.4)	8/9/16 02:37 p		2.06	ASC1RH
						5.91E-02	1.00E+00	(6.5)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002



**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/15/2016 9:30:00 AM

Lot-Sample No.: J6G070440-8

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-19(8-12')(160-17824-10)

COC No. :

Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WNC1AA		Report DB ID: 9M8WNC10					
RADIUM-226	<b>4.36E-01</b>		8.3E-02	1.4E-01	8.78E-02	PCI_G	93%	(5.)	8/9/16 02:58 p		1.99	ASCCSC
						4.05E-02	1.00E+00	(6.5)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc  
 Lot-Sample No.: J6G070440-17  
 Client Sample ID: SB-22(0-2')(160-17824-20)

SDG: 51703  
 Report No. : 69142  
 COC No. :

Collection Date: 6/14/2016 2:50:00 PM  
 Received Date: 6/30/2016 10:15:00 AM  
 Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WNM1AA		Report DB ID: 9M8WNM10					
RADIUM-226	7.76E-01		1.3E-01	2.2E-01	1.57E-01	PCI_G	85%	(5.)	8/9/16 08:17 p		1.99	ASC6MB
						7.49E-02	1.00E+00	(7.1)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

<b>Lab Name:</b> TestAmerica Inc	<b>SDG:</b> 51703	<b>Collection Date:</b> 6/14/2016 3:10:00 PM
<b>Lot-Sample No.:</b> J6G070440-15	<b>Report No. :</b> 69142	<b>Received Date:</b> 6/30/2016 10:15:00 AM
<b>Client Sample ID:</b> SB-22(16-20*)(160-17824-18)	<b>COC No. :</b>	<b>Matrix:</b> SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WNK1AA		Report DB ID: 9M8WNK10					
RADIUM-226	<b>9.82E-01</b>		1.2E-01	2.8E-01	1.27E-01	PCI_G	86%	(7.8)	8/9/16 08:17 p		2.03	ASC4HB
						5.99E-02	1.00E+00	(7.)			g	

No. of Results: 1      Comments:

TestAmerica Inc    MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample    U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

<b>Lab Name:</b> TestAmerica Inc	<b>SDG:</b> 51703	<b>Collection Date:</b> 6/14/2016 9:35:00 AM
<b>Lot-Sample No.:</b> J6G070440-12	<b>Report No. :</b> 69142	<b>Received Date:</b> 6/30/2016 10:15:00 AM
<b>Client Sample ID:</b> SB-23(1-2')(160-17824-15)	<b>COC No. :</b>	<b>Matrix:</b> SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WNG1AA	Report DB ID: 9M8WNG10						
RADIUM-226	<b>4.48E-01</b>		1.0E-01	1.5E-01	1.17E-01	PCI_G	84%	(3.8)	8/9/16 02:58 p		2.01	ASCMRA
						5.41E-02	1.00E+00	(6.)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/14/2016 10:30:00 AM

Lot-Sample No.: J6G070440-9

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-23(12-16\*)(160-17824-12)

COC No. :

Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WND1AA		Report DB ID: 9M8WND10					
RADIUM-226	8.77E-02	U	6.1E-02	6.7E-02	9.40E-02	PCI_G	79%	0.93	8/9/16 02:59 p		2.4	ASCHSB
						4.30E-02	1.00E+00	(2.6)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc  
 Lot-Sample No.: J6G070440-2  
 Client Sample ID: SB-24(0-2')(160-17824-4)

SDG: 51703  
 Report No. : 69142  
 COC No. :

Collection Date: 6/14/2016 4:10:00 PM  
 Received Date: 6/30/2016 10:15:00 AM  
 Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001			Work Order: M8WM51AA		Report DB ID: 9M8WM510						
RADIUM-226	<b>4.03E-01</b>		9.4E-02	1.4E-01	1.18E-01	PCI_G	90%	(3.4)	8/9/16 02:37 p		2.0	ASC3RA
						5.52E-02	1.00E+00	(5.7)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/14/2016 4:35:00 PM

Lot-Sample No.: J6G070440-3

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-24(12-16\*)(160-17824-5)

COC No. :

Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WM61AA		Report DB ID: 9M8WM610					
RADIUM-226	4.46E-01		1.1E-01	1.6E-01	1.41E-01	PCI_G	82%	(3.2)	8/9/16 02:37 p		1.97	ASC5HB
						6.66E-02	1.00E+00	(5.7)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc  
 Lot-Sample No.: J6G070440-7  
 Client Sample ID: SB-25(0-2')(160-17824-9)

SDG: 51703  
 Report No. : 69142  
 COC No. :

Collection Date: 6/14/2016 6:40:00 PM  
 Received Date: 6/30/2016 10:15:00 AM  
 Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WNA1AA		Report DB ID: 9M8WNA10					
RADIUM-226	<b>4.47E-01</b>		1.0E-01	1.5E-01	1.21E-01	PCI_G	74%	(3.7)	8/9/16 02:37 p		2.2	ASCBMA
						5.65E-02	1.00E+00	(5.8)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002



**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/14/2016 6:45:00 PM

Lot-Sample No.: J6G070440-4

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-25(12-16\*)(160-17824-6)

COC No. :

Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WM71AA		Report DB ID: 9M8WM710					
RADIUM-226	<b>4.94E-01</b>		1.2E-01	1.7E-01	1.46E-01	PCI_G	73%	(3.4)	8/9/16 02:38 p		2.09	ASC8RE
						6.73E-02	1.00E+00	(5.9)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc	SDG: 51703	Collection Date: 6/14/2016 12:45:00 PM
Lot-Sample No.: J6G070440-13	Report No. : 69142	Received Date: 6/30/2016 10:15:00 AM
Client Sample ID: SB-26(0-2')(160-17824-16)	COC No. :	Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WVNH1AA	Report DB ID: 9M8WVNH10						
RADIUM-226	7.18E-01		1.0E-01	2.0E-01	1.10E-01	PCI_G	84%	(6.5)	8/9/16 08:17 p		2.11	ASC1HB
						5.18E-02	1.00E+00	(7.4)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/14/2016 1:25:00 PM

Lot-Sample No.: J6G070440-11

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-26(12-16\*)(160-17824-14)

COC No. :

Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WNF1AA		Report DB ID: 9M8WNF10					
RADIUM-226	7.63E-01		9.4E-02	2.0E-01	6.97E-02	PCI_G	95%	(11.)	8/9/16 02:58 p		2.05	ASCLMD
						3.16E-02	1.00E+00	(7.6)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

**Lab Name:** TestAmerica Inc  
**Lot-Sample No.:** J6G070440-6  
**Client Sample ID:** SB-27(0-2')(160-17824-8)

**SDG:** 51703  
**Report No. :** 69142  
**COC No. :**

**Collection Date:** 6/14/2016 5:20:00 PM  
**Received Date:** 6/30/2016 10:15:00 AM  
**Matrix:** SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WM91AA		Report DB ID: 9M8WM910					
RADIUM-226	<b>4.03E-01</b>		1.0E-01	1.4E-01	1.25E-01	PCI_G	79%	(3.2)	8/9/16 02:37 p		1.98	ASCASC
						5.79E-02	1.00E+00	(6.)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/14/2016 5:45:00 PM

Lot-Sample No.: J6G070440-5

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-27(18-22')(160-17824-7)

COC No. :

Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WM81AA		Report DB ID: 9M8WM810					
RADIUM-226	<b>5.26E-01</b>		1.1E-01	1.5E-01	1.23E-01	PCI_G	76%	(4.3)	8/9/16 02:37 p		2.09	ASC9RA
						5.61E-02	1.00E+00	(6.9)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/13/2016 5:15:00 PM

Lot-Sample No.: J6G070440-10

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-28(0-2')(160-17824-13)

COC No. :

Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WNE1AA		Report DB ID: 9M8WNE10					
RADIUM-226	5.47E-01		8.9E-02	1.7E-01	8.58E-02	PCI_G	95%	(6.4)	8/9/16 02:58 p		1.95	ASCKMF
						3.95E-02	1.00E+00	(6.3)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc	SDG: 51703	Collection Date: 6/13/2016 6:00:00 PM
Lot-Sample No.: J6G070440-14	Report No. : 69142	Received Date: 6/30/2016 10:15:00 AM
Client Sample ID: SB-28(17-20*)(160-17824-17)	COC No. :	Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WJ1AA		Report DB ID: 9M8WJ10					
RADIUM-226	<b>5.33E-01</b>		8.7E-02	1.6E-01	8.58E-02	PCI_G	85%	(6.2)	8/9/16 08:17 p		2.22	ASC3MA
						3.96E-02	1.00E+00	(6.5)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/15/2016 2:55:00 PM

Lot-Sample No.: J6G070440-18

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-35(0-2')(160-17824-22)

COC No. :

Matrix: SOLID SO

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WNN1AA		Report DB ID: 9M8WNN10					
RADIUM-226	6.80E-01		1.1E-01	2.1E-01	1.22E-01	PCI_G	100%	(5.6)	8/9/16 08:17 p		1.99	ASC8HA
						5.78E-02	1.00E+00	(6.6)			g	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002



FORM II

Date: 11-Aug-16

DUPLICATE RESULTS

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/15/2016 9:15:00 AM

Lot-Sample No.: J6G070440-1

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-19(0-2')(160-17824-3) DUP

COC No. :

Matrix: SOLID SO

Parameter	Result, Orig Rst	Qual	Count Error ( 2 s)	CSU ( 2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190033	RL-RA-001				Work Order: M8WM41AC	Report DB ID: M8WM41CR			Orig Sa DB ID: 9M8WM410			
RADIUM-226	5.42E-01		8.9E-02	1.4E-01	9.08E-02	PCI_G	84%	(6.)	8/9/16 02:38 p		2.22	ASC2RC
	5.56E-01			<b>RER2 0.1</b>		1.00E+00		(7.8)			g	

No. of Results: 1      Comments:

TestAmerica Inc      RER2      - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUD))] as defined by ICPT BOA.

rptSTLRchDupV5.      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

6 A2002

FORM II

Date: 11-Aug-16

DUPLICATE RESULTS

Lab Name: TestAmerica Inc

SDG: 51703

Collection Date: 6/14/2016 12:45:00 PM

Lot-Sample No.: J6G070440-13

Report No. : 69142

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: SB-26(0-2')(160-17824-16) DUP

COC No. :

Matrix: SOLID SO

Parameter	Result, Orig Rst	Qual	Count Error ( 2 s)	CSU ( 2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190034	RL-RA-001				Work Order: M8WNH1AC			Report DB ID: M8WNH1CR		Orig Sa DB ID: 9M8WNH10		
RADIUM-226	9.22E-01		1.3E-01	2.7E-01	1.43E-01	PCI_G	77%	(6.4)	8/9/16 08:17 p		1.99	ASC2HA
	7.18E-01				RER2 1.2			1.00E+00			g	

No. of Results: 1      Comments:

TestAmerica Inc      RER2      - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUD))] as defined by ICPT BOA.

rptSTLRchDupV5.      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

6 A2002

**FORM II**  
**BLANK RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Matrix: SOLID

Report No. : 69142

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
<b>Batch:</b> 6190033	RL-RA-001											
RADIUM-226	3.99E-02	U	5.2E-02	5.2E-02	8.53E-02	PCI_G	96%	0.47	8/9/16 02:58 p		2.31	ASCNMA
					3.96E-02	1.00E+00		(1.5)			g	
<b>Batch:</b> 6190034	RL-RA-001											
RADIUM-226	7.96E-03	U	4.2E-02	4.2E-02	7.35E-02	PCI_G	96%	0.11	8/9/16 08:29 p		2.34	ASCJMB
					3.40E-02	1.00E+00		0.38			g	

No. of Results: 2      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchBlank      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM II**  
**LCS RESULTS**

Date: 11-Aug-16

Lab Name: TestAmerica Inc

SDG: 51703

Matrix: SOLID

Report No. : 69142

Parameter	Result	Qual	Count Error ( 2 s)	CSU ( 2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
<b>Batch:</b> 6190033	RL-RA-001												
	RADIUM-226		1.2E-01	6.1E-01	1.49E-01	PCI_G	90%	6.75E-01	7.6E-03	95%	8/9/16 02:58 p	2.01	ASCPMA
												g	
							<b>Rec Limits:</b>	75	125	0.0			
<b>Batch:</b> 6190034	RL-RA-001												
	RADIUM-226		1.0E-01	1.9E-01	8.39E-02	PCI_G	89%	5.99E-01	6.8E-03	107%	8/10/16 09:58 a	2.28	ASCKMD
												g	
							<b>Rec Limits:</b>	75	125	0.1			
<b>No. of Results:</b> 2	<b>Comments:</b>												

TestAmerica Inc Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs  
V5.6 A2002

**TestAmerica St. Louis**

13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

**Chain of Custody Record**



<b>Client Information (Sub Contract Lab)</b>		Sampler:		Lab PM: Hoerchler, Elizabeth M		Carrier Tracking No(s):		COC No: 160-87918.1			
Client Contact: Shipping/Receiving		Phone:		E-Mail: elizabeth.hoerchler@testamericainc.com				Page: Page 1 of 3			
Company: TestAmerica Laboratories, Inc.				<b>Analysis Requested</b>						Job #: 160-17824-1	
Address: 2800 George Washington Way, City: Richland State, Zip: WA, 99352		Due Date Requested: 7/13/2016		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) SUB (Radium-226 by Radon Emanation - EPA 903.1)				Total Number of Containers		Preservation Codes: A - HCL                      M - Hexane B - NaOH                    N - None C - Zn Acetate            O - AsNaO2 D - Nitric Acid            P - Na2O4S E - NaHSO4                Q - Na2SO3 F - MeOH                    R - Na2S2O3 G - Amchlor                S - H2SO4 H - Ascorbic Acid        T - TSP Dodecahydrate I - Ice                        U - Acetone J - DI Water                V - MCAA K - EDTA                    W - ph 4-5 L - EDA                      Z - other (specify)	
TAT Requested (days):		PO #:									
Project #: Former Reid Hospital Site		WO #:									
SSOW#:											
Email:										Special Instructions/Note:   J6G070440 SD6-S1703	
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)						
				Preservation Code							
SB-19 (0-2') (160-17824-3) <i>mgwm4</i>		6/15/16	09:15 Central	Solid		X					
SB-24 (0-2') (160-17824-4) <i>mgwm5</i>		6/14/16	16:10 Central	Solid		X					
SB-24 (12-16') (160-17824-5) <i>mgwm6</i>		6/14/16	16:35 Central	Solid		X					
SB-25 (12-16') (160-17824-6) <i>mgwm7</i>		6/14/16	18:45 Central	Solid		X					
SB-27 (18-22') (160-17824-7) <i>mgwm8</i>		6/14/16	17:45 Central	Solid		X					
SB-27 (0-2') (160-17824-8) <i>mgwm9</i>		6/14/16	17:20 Central	Solid		X					
SB-25 (0-2') (160-17824-9) <i>mgwnA</i>		6/14/16	18:40 Central	Solid		X					
SB-19 (8-12') (160-17824-10) <i>mgwnC</i>		6/15/16	09:30 Central	Solid		X					
SB-23 (12-16') (160-17824-12) <i>mgwnD</i>		6/14/16	10:30 Central	Solid		X					
SB-28 (0-2') (160-17824-13) <i>mgwnE</i>		6/13/16	17:15 Central	Solid		X					
SB-26 (12-16') (160-17824-14) <i>mgwnF</i>		6/14/16	13:25 Central	Solid		X					
<b>Possible Hazard Identification</b>						Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month ) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Unconfirmed, Level 1 radioactive						Special Instructions/QC Requirements:					
Deliverable Requested: I, II, III, IV, Other (specify)											
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment: <i>rec</i>					
Relinquished by: <i>[Signature]</i>		Date/Time: <i>6/29/16 1700</i>		Company:		Received by: <i>[Signature]</i>		Date/Time: <i>6-30-16/1015</i>		Company: <i>TA/LR</i>	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:							

# Chain of Custody Record

<b>Client Information (Sub Contract Lab)</b> Client Contact: Shipping/Receiving Company: TestAmerica Laboratories, Inc. Address: 2800 George Washington Way, City: Richland State, Zip: WA, 99352 Phone: 509-375-3131(Tel) 509-375-5590(Fax) Email:		Sampler: Phone: Lab PM: Hoerchler, Elizabeth M E-Mail: elizabeth.hoerchler@testamericainc.com	Carrier Tracking No(s):	COC No: 160-87918.2 Page: Page 2 of 3 Job #: 160-17824-1						
Due Date Requested: 7/13/2016 TAT Requested (days): PO #: WO #: Project #: 16005365 SSOW#:		<b>Analysis Requested</b>		Preservation Codes: A - HCL                      M - Hexane B - NaOH                    N - None C - Zn Acetate            O - AsNaO2 D - Nitric Acid            P - Na2O4S E - NaHSO4                Q - Na2SO3 F - MeOH                  R - Na2S2O3 G - Amchlor                S - H2SO4 H - Ascorbic Acid        T - TSP Dodecahydrate I - Ice                        U - Acetone J - DI Water                V - MCAA K - EDTA                  W - ph 4-5 L - EDA                     Z - other (specify) Other:						
Project Name: Former Reid Hospital Site Site:		SUB (Radium-226 by Radon Emanation - EPA 903.1)		Total Number of Containers:						
<b>Sample Identification - Client ID (Lab ID)</b>		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)	Special Instructions/Note:		
				Preservation Code:						
SB-23 (1-2') (160-17824-15) <i>MSWNB</i>		6/14/16	09:35 Central	Solid		X		1		
SB-26 (0-2') (160-17824-16) <i>MSWNA</i>		6/14/16	12:45 Central	Solid		X		1		
SB-28 (17-20') (160-17824-17) <i>MSWNB</i>		6/13/16	18:00 Central	Solid		X		1		
SB-22 (16-20') (160-17824-18) <i>MSWNB</i>		6/14/16	15:10 Central	Solid		X		1		
DUP-A (160-17824-19) <i>MSWNL</i>		6/14/16	Central	Solid		X		1		
SB-22 (0-2') (160-17824-20) <i>MSWNB</i>		6/14/16	14:50 Central	Solid		X		1		
SB-35 (0-2') (160-17824-22) <i>MSWNB</i>		6/15/16	14:55 Central	Solid		X		1		
SB-16 (0-2') (160-17824-23) <i>MSWNB</i>		6/15/16	15:45 Central	Solid		X		1		
SB-16 (8-12') (160-17824-24) <i>MSWNB</i>		6/15/16	16:10 Central	Solid		X		1	<i>JOB 0440 506-5103</i>	
SB-18 (0-2') (160-17824-25) <i>MSWNB</i>		6/15/16	11:05 Central	Solid		X		1		
SB-17 (16-20') (160-17824-26) <i>MSWNB</i>		6/15/16	10:10 Central	Solid		X		1		
<b>Possible Hazard Identification</b> Unconfirmed, Level 1 radioactive Deliverable Requested: I, II, III, IV, Other (specify)						Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Empty Kit Relinquished by:						Special Instructions/QC Requirements:				
Relinquished by: <i>[Signature]</i>		Date/Time: 6/29/16 1700		Company:		Received by: <i>[Signature]</i>		Date/Time: 6.30.16/1015		Company: TALK
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:						

Chain of Custody Record

<b>Client Information (Sub Contract Lab)</b>			Sampler:		Lab PM: Hoerchler, Elizabeth M		Carrier Tracking No(s):		COC No: 160-87918.3												
Client Contact: Shipping/Receiving			Phone:		E-Mail: elizabeth.hoerchler@testamericainc.com				Page: Page 3 of 3												
Company: TestAmerica Laboratories, Inc.				<b>Analysis Requested</b>								Job #: 160-17824-1									
Address: 2800 George Washington Way,				Due Date Requested: 7/13/2016		Field Filtered Sample (Yes or No)		Perform MSD (Yes or No)		SUB (Radlum-226 by Radon Emanation - EPA 903.1)		Total Number of containers		Preservation Codes:							
City: Richland				TAT Requested (days):										A - HCL                  M - Hexane							
State, Zip: WA, 99352				PO #:										B - NaOH                  N - None							
Phone: 509-375-3131(Tel) 509-375-5590(Fax)				WO #:										C - Zn Acetate              O - AsNaO2							
Email:				Project #: 16005365										D - Nitric Acid              P - Na2O4S							
Project Name: Former Reid Hospital Site				SSOW#:										E - NaHSO4                  Q - Na2SO3							
Site:														F - MeOH                      R - Na2S2O3							
														G - Amchlor                 S - H2SO4							
														H - Ascorbic Acid          T - TSP Dodecahydrate							
														I - Ice                          U - Acetone							
														J - DI Water                 V - MCAA							
														K - EDTA                      W - ph 4-5							
														L - EDA                         Z - other (specify)							
														Other:							
<b>Sample Identification - Client ID (Lab ID)</b>																<b>Special Instructions/Note:</b>					
		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 MSD (Yes or No)		SUB (Radlum-226 by Radon Emanation - EPA 903.1)							
												Preservation Code									
SB-18 (16-20) (160-17824-27)		6/15/16		11:40 Central		MSWNV Solid				X											
SB-17 (0-2) (160-17824-28)		6/15/16		10:00 Central		MSWNV Solid				X											
DUP-B (160-17824-29)		6/15/16		Central		MSWNV Solid				X											
												Total Number of containers									
												Job 070440 SD6-51703									
Possible Hazard Identification												<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				Unconfirmed, Level 1 radioactive Deliverable Requested: I, II, III, IV, Other (specify)					
Empty Kit Relinquished by:						Date:				Time:				Method of Shipment: F.O.C.							
Relinquished by: <i>B-f</i>						Date/Time: 6/29/16 1700				Company: TALL				Received by: <i>Bob J Beck 7-7-16</i>				Date/Time: 6-30-16/1015			
Relinquished by:						Date/Time:				Company:				Received by:				Date/Time:			
Relinquished by:						Date/Time:				Company:				Received by:				Date/Time:			
Custody Seals Intact:						Custody Seal No.:				Cooler Temperature(s) °C and Other Remarks:											



Sample Check-in List

Date/Time Received: 6-25-16/1015 Container GM Screen Result: (Airlock) 0 cpm Initials [B]

Sample GM Screen Result (Sample Receiving) 0 cpm Initials [B]

Client: STL SDG #: 51703 SAF #: NA [B]

Lot Number: J66-070440

Chain of Custody # 160-87918.1

Shipping Container ID or Air Bill Number : NA [B]

Samples received inside shipping container/cooler/box Yes [B] ] Continue with 1 through 4. Initial appropriate response. No [ ] ] Go to 5, add comment to #16.

- 1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [B]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B]
3. Cooler temperature: \_\_\_\_\_ °C NA [B]
4. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [B]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [B] ] No [ ]

6. Number of samples received (Each sample may contain multiple bottles): 25

7. Containers received: 25 x 4oz jar

8. Sample holding times exceeded? NA [ ] Yes [ ] No [B]

9. Samples have: \_\_\_\_\_ tape \_\_\_\_\_ hazard labels \_\_\_\_\_ custody seals [B] appropriate sample labels

10. Matrix: [B] A (FLT, Wipe, Solid, Soil) \_\_\_\_\_ I (Water) \_\_\_\_\_ S (Air, Niosh 7400) \_\_\_\_\_ T (Biological, Ni-63)

11. Samples: [B] are in good condition \_\_\_\_\_ are leaking \_\_\_\_\_ are broken
\_\_\_\_\_ have air bubbles (Only for samples requiring no head space) \_\_\_\_\_ Other \_\_\_\_\_

12. Sample pH appropriate for analysis requested Yes [ ] No [ ] NA [B]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO3 added and pH after addition on table)

13. Were any anomalies identified in sample receipt? Yes [ ] No [B]

14. Description of anomalies (include sample numbers): NA [B]

15. Sample Location, Sample Collector Listed on COC? \* Yes [ ] No [B]
\*For documentation only. No corrective action needed.

16. Additional Information: w/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: [Signature] Date: 6-30-16

Client Notification needed? Yes [ ] No [ ] Date: \_\_\_\_\_
By: \_\_\_\_\_
Person contacted: \_\_\_\_\_

[X] No action necessary; process as is
Project Manager [Signature] Date: 7-8-16



Analytical Data Package Prepared For  
**TESTAMERICA ST. LOUIS**

Radiochemical Analysis By  
**TestAmerica Inc**

*2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.*

Assigned Laboratory Code: TA-RL

*Data Package Contains 15 Pages*

Report No.: 69083

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
51704		EB-1(160-17845-3)	J6G070441-3	M8WN21AA	9M8WN210	6190032
		EB-2(160-17845-4)	J6G070441-4	M8WN31AA	9M8WN310	6190032
		RB-1(160-17845-1)	J6G070441-1	M8WN01AA	9M8WN010	6190032
		RB-2(160-17845-2)	J6G070441-2	M8WN11AA	9M8WN110	6190032

## Certificate of Analysis

August 1, 2016

TestAmerica St. Louis  
13715 Rider Trail North  
Earth City, MO 63045

Attention: Elizabeth Hoerchler

---

Date Received in Lab	:	June 30, 2016
Sample Type	:	Four (4) water
SDG Number	:	51704
Job Number	:	160-17845-1
Project Number/Name	:	Former Reid Hospital Site/16005365

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### CASE NARRATIVE

#### **I. Introduction**

On June 30, 2016, four samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt the samples were assigned to Lot Number J6G070441 with the laboratory ID number corresponding to the client ID as shown on the cover page.

#### **II. Sample Receipt**

The samples were received in good condition; the sample volume per sample was less than 500 mL, no other anomalies were noted upon check-in.

#### **III. Analytical Results/Methodology**

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

**Alpha Scintillation Counting**  
Radium-226 by method RL-RA-001 (EPA 903.1)

**IV. Quality Control**

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

**V. Comments**


**Alpha Scintillation Counting**

Radium-226 by method RL-RA-001:

There was insufficient sample volume received to provide a batch duplicate. A second LCS was prepared and analyzed with the batch to show precision and accuracy measurements. Except as noted, the LCS, LCSD, batch blank and sample results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

 Erika Jordan  
2016.08.01  
09:29:59 -07'00'

---

Erika Jordan  
Manager of Project Management

## Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	TestAmerica Richland's SOP No.
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

**Results in this report relate only to the sample(s) analyzed.**

### Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship,  $R = \text{constants} * f(x,y,z,...)$ . The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties ( $u_i$ ) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty ( $u_c$ ) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ( $S/\sqrt{n}$ ), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

## Report Definitions

<b>Action Lev</b>	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
<b>Batch</b>	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
<b>Bias</b>	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or TestAmerica.
<b>Count Error (#s)</b>	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
<b>CSU (#s) <i>u<sub>c</sub> Combined Standard Uncert.</i></b>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u<sub>c</sub> the combined standard uncertainty</i> . The uncertainty is absolute and in the same units as the result.
<b>(#s), Coverage Factor</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
<b>CRDL (RL)</b>	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
<b>Lc</b>	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \sqrt{2 * (BkgrndCnt / BkgrndCntMin) / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
<b>Lot-Sample No</b>	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
<b>MDC MDA MDL</b>	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \sqrt{((BkgrndCnt / BkgrndCntMin) / SCntMin) + 2.71 / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . For LSC methods the batch blank is used as a measure of the background variability.
<b>Primary Detector</b>	The instrument identifier associated with the analysis of the sample aliquot.
<b>Ratio U-234/U-238</b>	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
<b>Rst/MDC</b>	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Rst/TotUcert</b>	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Report DB No</b>	Sample Identifier used by the report system. The number is based upon the first five digits of the <b>Work Order</b> Number.
<b>RER</b>	The equation Replicate Error Ratio = $(S-D) / [\sqrt{TPUs^2 + TPUd^2}]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
<b>SDG</b>	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
<b>Sum Rpt Alpha Spec Rst(s)</b>	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
<b>Work Order</b>	The LIMS software assign test specific identifier.
<b>Yield</b>	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

# Sample Results Summary

Date: 01-Aug-16

## TestAmerica Inc TA-RL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 69083

SDG No: 51704

Batch	Client Id Work Order	Parameter	Result +- CSU ( 2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
<b>6190032 RL-RA-001</b>									
<b>EB-1(160-17845-3)</b>									
	M8WN21AA	RADIUM-226	1.18E-01 +- 2.9E-01	U	PCI_L	95%	4.93E-01	1.00E+00	
<b>EB-2(160-17845-4)</b>									
	M8WN31AA	RADIUM-226	5.02E-01 +- 4.9E-01	U	PCI_L	90%	7.77E-01	1.00E+00	
<b>RB-1(160-17845-1)</b>									
	M8WN01AA	RADIUM-226	9.45E-02 +- 2.7E-01	U	PCI_L	94%	4.60E-01	1.00E+00	
<b>RB-2(160-17845-2)</b>									
	M8WN11AA	RADIUM-226	2.16E-02 +- 2.4E-01	U	PCI_L	82%	4.28E-01	1.00E+00	
<b>No. of Results: 4</b>									

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TestAmerica Inc      RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 rptTALRchSaSum    U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan  
 mary2 V5.6 A2002    software.

**QC Results Summary**  
**TestAmerica Inc TA-RL**  
 Ordered by Method, Batch No, QC Type,.

Date: 01-Aug-16

Report No. : 69083

SDG No.: 51704

Batch	Work Order	Parameter	Result +- CSU ( 2 s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
<b>RL-RA-001</b>									
6190032 BLANK QC,									
	M8WRX1AA	RADIUM-226	-5.30E-02 +- 1.1E-01	U	PCI_L	88%			2.07E-01
6190032 LCS,									
	M8WRX1AD	RADIUM-226	1.66E+00 +- 5.0E-01		PCI_L	85%	123%	0.2	2.24E-01
	M8WRX1AC	RADIUM-226	1.66E+00 +- 5.0E-01		PCI_L	98%	124%	0.2	1.61E-01
<b>No. of Results: 3</b>									

TestAmerica Inc Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSummary V5.6 A2002 U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51704

Collection Date: 6/16/2016 5:00:00 PM

Lot-Sample No.: J6G070441-3

Report No. : 69083

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: EB-1(160-17845-3)

COC No. :

Matrix: WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032	RL-RA-001				Work Order: M8WN21AA		Report DB ID: 9M8WN210					
RADIUM-226	1.18E-01	U	2.9E-01	2.9E-01	4.93E-01	PCI_L	95%	0.24	7/30/16 03:00 p		0.4785	ASC4HB
						2.33E-01	1.00E+00	0.8			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002



**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51704

Collection Date: 6/16/2016 5:15:00 PM

Lot-Sample No.: J6G070441-4

Report No. : 69083

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: EB-2(160-17845-4)

COC No. :

Matrix: WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032	RL-RA-001				Work Order: M8WN31AA		Report DB ID: 9M8WN310					
RADIUM-226	5.02E-01	U	4.8E-01	4.9E-01	7.77E-01	PCI_L	90%	0.65	7/30/16 03:00 p		0.4879	ASC6HB
						3.71E-01	1.00E+00	(2.1)			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51704

Collection Date: 6/16/2016 5:30:00 PM

Lot-Sample No.: J6G070441-1

Report No. : 69083

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: RB-1(160-17845-1)

COC No. :

Matrix: WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032	RL-RA-001				Work Order: M8WN01AA		Report DB ID: 9M8WN010					
RADIUM-226	9.45E-02	U	2.7E-01	2.7E-01	4.60E-01	PCI_L	94%	0.21	7/30/16 03:01 p		0.4689	ASC1RH
						2.16E-01	1.00E+00	0.7			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51704

Collection Date: 6/16/2016 5:45:00 PM

Lot-Sample No.: J6G070441-2

Report No. : 69083

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: RB-2(160-17845-2)

COC No. :

Matrix: WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032	RL-RA-001				Work Order: M8WN11AA		Report DB ID: 9M8WN110					
RADIUM-226	2.16E-02	U	2.4E-01	2.4E-01	4.28E-01	PCI_L	82%	0.05	7/30/16 03:01 p		0.5095	ASC2RC
						1.99E-01	1.00E+00	0.18			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM II**  
**BLANK RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51704

Matrix: WATER

Report No. : 69083

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
<b>Batch:</b> 6190032	RL-RA-001											
RADIUM-226	-5.30E-02	U	1.1E-01	1.1E-01	2.07E-01	PCI_L	88%	-0.26	7/30/16 03:11 p		1.0071	ASCHMA
					9.63E-02	1.00E+00		-0.94			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchBlank      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM II**  
**LCS RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51704

Matrix: WATER

Report No. : 69083

Parameter	Result	Qual	Count Error ( 2 s)	CSU ( 2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
<b>Batch:</b> 6190032	RL-RA-001					<b>Work Order:</b> M8WRX1AC		<b>Report DB ID:</b> M8WRX1CS					
RADIUM-226	1.66E+00		2.0E-01	5.0E-01	1.61E-01	PCI_L	98%	1.34E+00	1.5E-02	124%	7/30/16 03:11 p	1.0092	ASCKMF
							<b>Rec Limits:</b>	75	125	0.2		L	
<b>Batch:</b> 6190032	RL-RA-001					<b>Work Order:</b> M8WRX1AD		<b>Report DB ID:</b> M8WRX1DS					
RADIUM-226	1.66E+00		2.4E-01	5.0E-01	2.24E-01	PCI_L	85%	1.34E+00	1.5E-02	123%	7/30/16 05:13 p	1.0045	ASCPMB
							<b>Rec Limits:</b>	75	125	0.2		L	

**No. of Results:** 2      **Comments:**

TestAmerica Inc    Bias    - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs  
V5.6 A2002

# Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b>		Sampler: _____	Lab PM: Hoerchler, Elizabeth M	Carrier Tracking No(s): _____	COC No: 160-87918.1
Client Contact: Shipping/Receiving		Phone: _____	E-Mail: elizabeth.hoerchler@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.			<b>Analysis Requested</b>		Job #: 160-17845-1
Address: 2800 George Washington Way, _____		Due Date Requested: 7/14/2016	SUB (Radium-226 by Radon Emanation - EPA 903.1) Field Filtered Sample (Yes or No) _____ Perform MS/MS (Yes or No) _____		Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify)
City: Richland		TAT Requested (days): _____			
State, Zip: WA, 99352		PO #: _____			
Phone: 509-375-3131(Tel) 509-375-5590(Fax)		WO #: _____			
Email: _____		Project #: 16005365			Other: _____
Project Name: Former Reid Hospital Site		SSOW#: _____			
Site: _____					

Sample Identification - Client ID (Lab ID)	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/MS (Yes or No)	SUB (Radium-226 by Radon Emanation - EPA 903.1)	Total Number of Containers	Special Instructions/Note:
RB-1 (160-17845-1) <i>MSWN0</i>	6/16/16	17:30 Central		Water			X	1	
RB-2 (160-17845-2) <i>MSWN1</i>	6/16/16	17:45 Central		Water			X	1	
EB-1 (160-17845-3) <i>MSWN2</i>	6/16/16	17:00 Central		Water			X	1	
EB-2 (160-17845-4) <i>MSWN3</i>	6/16/16	17:15 Central		Water			X	1	



*J6G070441*  
*SDS-51704*

<b>Possible Hazard Identification</b>			<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>		
Level 1 radioactive			<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>B.J.</i>	Date/Time: <i>6/29/16 1700</i>	Company: _____	Received by: <i>Jack J. Beck</i>	Date/Time: <i>6-30-16/1015</i>	Company: <i>TALR</i>
Relinquished by: _____	Date/Time: _____	Company: _____	Received by: _____	Date/Time: _____	Company: _____
Relinquished by: _____	Date/Time: _____	Company: _____	Received by: _____	Date/Time: _____	Company: _____
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No			Custody Seal No.: _____		
Cooler Temperature(s) °C and Other Remarks:					

TestAmerica Laboratories, Inc.

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Sample Check-in List

Date/Time Received: 6-30-16/1015 Container GM Screen Result: (Airlock) 0 cpm Initials [ ]  
Sample GM Screen Result (Sample Receiving) 0 cpm Initials [ ]

Client: STL SDG #: 51704 SAF #: NA [ ]

Lot Number: J66070441

Chain of Custody # 160-87918.1

Shipping Container ID or Air Bill Number : NA [ ]

Samples received inside shipping container/cooler/box Yes [ ] Continue with 1 through 4. Initial appropriate response.  
No [ ] Go to 5, add comment to #16.

- 1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [ ]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [ ]
3. Cooler temperature: °C NA [ ]
4. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

- 5. Chain of Custody record present? Yes [ ] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 4
7. Containers received: 4 x 500 mL (or less)

- 8. Sample holding times exceeded? NA [ ] Yes [ ] No [ ]
9. Samples have: tape hazard labels custody seals appropriate sample labels
10. Matrix: A (FLT, Wipe, Solid, Soil) I (Water) S (Air, Niosh 7400) T (Biological, Ni-63)

11. Samples: are in good condition are leaking are broken  
have air bubbles (Only for samples requiring no head space) Other

12. Sample pH appropriate for analysis requested Yes [ ] No [ ] NA [ ]  
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO3 added and pH after addition on table)

- 13. Were any anomalies identified in sample receipt? Yes [ ] No [ ]
14. Description of anomalies (include sample numbers): NA [ ]

15. Sample Location, Sample Collector Listed on COC? \* Yes [ ] No [ ]  
\*For documentation only. No corrective action needed.

16. Additional Information: w/A Very limited volume. Less than 500 mLs per sample

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:  
Signature: Date: 6-30-16

Client Notification needed? Yes [ ] No [ ] Date: By: Person contacted:

[X] No action necessary, process as is  
Project Manager Date 7-8-16

Analytical Data Package Prepared For  
**TESTAMERICA ST. LOUIS**

Radiochemical Analysis By  
**TestAmerica Inc**

*2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.*

Assigned Laboratory Code: TA-RL

*Data Package Contains 14 Pages*

Report No.: 69085

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
51705		DUP-GW(160-17883-2)	J6G070442-2	M8WN51AA	9M8WN510	6190032
		MW-6(160-17883-3)	J6G070442-3	M8WN61AA	9M8WN610	6190032
		MW-7(160-17883-1)	J6G070442-1	M8WN41AA	9M8WN410	6190032



## Certificate of Analysis

August 1, 2016

TestAmerica St. Louis  
13715 Rider Trail North  
Earth City, MO 63045

Attention: Elizabeth Hoerchler

---

Date Received in Lab	:	June 30, 2016
Sample Type	:	Three (3) water
SDG Number	:	51705
Job Number	:	160-17883-1
Project Number/Name	:	Former Reid Hospital Site/16005365

---

### CASE NARRATIVE

#### **I. Introduction**

On June 30, 2016, three samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt the samples were assigned to Lot Number J6G070442 with the laboratory ID number corresponding to the client ID as shown on the cover page.

#### **II. Sample Receipt**

The samples were received in good condition no anomalies were noted upon check-in.

#### **III. Analytical Results/Methodology**

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

**Alpha Scintillation Counting**  
Radium-226 by method RL-RA-001 ( EPA 903.1)

**IV. Quality Control**

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.


**V. Comments**

**Alpha Scintillation Counting**

There was insufficient sample volume received to provide a batch duplicate. A second LCS was prepared and analyzed with the batch to show precision and accuracy measurements. Except as noted, the LCS, LCSD, batch blank and sample results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

 Erika Jordan  
2016.08.01  
09:38:32 -07'00'

---

Erika Jordan  
Manager of Project Management

## Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	TestAmerica Richland's SOP No.
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

**Results in this report relate only to the sample(s) analyzed.**

### Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship,  $R = \text{constants} * f(x,y,z,...)$ . The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties ( $u_i$ ) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty ( $u_c$ ) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ( $S/\sqrt{n}$ ), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

## Report Definitions

<b>Action Lev</b>	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
<b>Batch</b>	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
<b>Bias</b>	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or TestAmerica.
<b>Count Error (#s)</b>	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
<b>CSU (#s) <i>u<sub>c</sub> Combined Standard Uncert.</i></b>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u<sub>c</sub> the combined standard uncertainty</i> . The uncertainty is absolute and in the same units as the result.
<b>(#s), Coverage Factor</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
<b>CRDL (RL)</b>	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
<b>Lc</b>	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \sqrt{2 * (BkgrndCnt / BkgrndCntMin) / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
<b>Lot-Sample No</b>	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
<b>MDC MDA MDL</b>	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \sqrt{((BkgrndCnt / BkgrndCntMin) / SCntMin) + 2.71 / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . For LSC methods the batch blank is used as a measure of the background variability.
<b>Primary Detector</b>	The instrument identifier associated with the analysis of the sample aliquot.
<b>Ratio U-234/U-238</b>	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
<b>Rst/MDC</b>	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Rst/TotUcert</b>	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Report DB No</b>	Sample Identifier used by the report system. The number is based upon the first five digits of the <b>Work Order</b> Number.
<b>RER</b>	The equation Replicate Error Ratio = $(S-D) / [\sqrt{TPUs^2 + TPUd^2}]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
<b>SDG</b>	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
<b>Sum Rpt Alpha Spec Rst(s)</b>	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
<b>Work Order</b>	The LIMS software assign test specific identifier.
<b>Yield</b>	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

# Sample Results Summary

Date: 01-Aug-16

## TestAmerica Inc TA-RL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 69085

SDG No: 51705

Batch	Client Id Work Order	Parameter	Result +- CSU ( 2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
6190032	RL-RA-001								
	<b>DUP-GW(160-17883-2)</b>								
	M8WN51AA	RADIUM-226	5.31E-01 +- 2.1E-01		PCI_L	95%	2.22E-01	1.00E+00	
	<b>MW-6(160-17883-3)</b>								
	M8WN61AA	RADIUM-226	8.97E-01 +- 2.9E-01		PCI_L	67%	2.52E-01	1.00E+00	
	<b>MW-7(160-17883-1)</b>								
	M8WN41AA	RADIUM-226	1.28E+00 +- 4.0E-01		PCI_L	92%	2.02E-01	1.00E+00	
	No. of Results:	3							

TestAmerica Inc RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

rptTALRchSaSum  
mary2 V5.6 A2002

**QC Results Summary**  
**TestAmerica Inc TA-RL**  
 Ordered by Method, Batch No, QC Type,.

Date: 01-Aug-16

Report No. : 69085

SDG No.: 51704

Batch	Work Order	Parameter	Result +- CSU ( 2 s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
<b>RL-RA-001</b>									
6190032 BLANK QC,									
	M8WRX1AA	RADIUM-226	-5.30E-02 +- 1.1E-01	U	PCI_L	88%			2.07E-01
6190032 LCS,									
	M8WRX1AD	RADIUM-226	1.66E+00 +- 5.0E-01		PCI_L	85%	123%	0.2	2.24E-01
	M8WRX1AC	RADIUM-226	1.66E+00 +- 5.0E-01		PCI_L	98%	124%	0.2	1.61E-01
<b>No. of Results: 3</b>									

TestAmerica Inc Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSummary V5.6 A2002 U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc  
 Lot-Sample No.: J6G070442-2  
 Client Sample ID: DUP-GW(160-17883-2)

SDG: 51705  
 Report No. : 69085  
 COC No. :

Collection Date: 6/20/2016  
 Received Date: 6/30/2016 10:15:00 AM  
 Matrix: WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032	RL-RA-001			Work Order: M8WN51AA		Report DB ID: 9M8WN510						
RADIUM-226	5.31E-01		1.7E-01	2.1E-01	2.22E-01	PCI_L	95%	(2.4)	7/30/16 03:01 p		1.0456	ASC8RE
						1.02E-01	1.00E+00	(5.)			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51705

Collection Date: 6/20/2016 1:25:00 PM

Lot-Sample No.: J6G070442-3

Report No. : 69085

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: MW-6(160-17883-3)

COC No. :

Matrix: WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032	RL-RA-001				Work Order: M8WN61AA		Report DB ID: 9M8WN610					
RADIUM-226	<b>8.97E-01</b>		2.1E-01	2.9E-01	2.52E-01	PCI_L	67%	(3.6)	7/30/16 03:00 p		1.0653	ASCASC
						1.16E-01	1.00E+00	(6.1)			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002



**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51705

Collection Date: 6/20/2016 4:50:00 PM

Lot-Sample No.: J6G070442-1

Report No. : 69085

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: MW-7(160-17883-1)

COC No. :

Matrix: WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032	RL-RA-001				Work Order: M8WN41AA		Report DB ID: 9M8WN410					
RADIUM-226	1.28E+00		2.0E-01	4.0E-01	2.02E-01	PCI_L	92%	(6.3)	7/30/16 03:01 p		1.0677	ASC7HA
						9.43E-02	1.00E+00	(6.5)			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM II**  
**BLANK RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51704

Matrix: WATER

Report No. : 69085

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
<b>Batch:</b> 6190032	RL-RA-001											
				<b>Work Order:</b> M8WRX1AA				<b>Report DB ID:</b> M8WRX1AB				
RADIUM-226	-5.30E-02	U	1.1E-01	1.1E-01	2.07E-01	PCI_L	88%	-0.26	7/30/16 03:11 p		1.0071	ASCHMA
					9.63E-02	1.00E+00		-0.94			L	

No. of Results: 1

Comments:

TestAmerica Inc MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchBlank U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM II**  
**LCS RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51704

Matrix: WATER

Report No. : 69085

Parameter	Result	Qual	Count Error ( 2 s)	CSU ( 2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
<b>Batch:</b> 6190032	RL-RA-001					<b>Work Order:</b> M8WRX1AC		<b>Report DB ID:</b> M8WRX1CS					
RADIUM-226	1.66E+00		2.0E-01	5.0E-01	1.61E-01	PCI_L	98%	1.34E+00	1.5E-02	124%	7/30/16 03:11 p	1.0092	ASCKMF
							<b>Rec Limits:</b>	75	125	0.2		L	
<b>Batch:</b> 6190032	RL-RA-001					<b>Work Order:</b> M8WRX1AD		<b>Report DB ID:</b> M8WRX1DS					
RADIUM-226	1.66E+00		2.4E-01	5.0E-01	2.24E-01	PCI_L	85%	1.34E+00	1.5E-02	123%	7/30/16 05:13 p	1.0045	ASCPMB
							<b>Rec Limits:</b>	75	125	0.2		L	

**No. of Results:** 2      **Comments:**

TestAmerica Inc    Bias    - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs  
V5.6 A2002

### Chain of Custody Record



TestAmerica Laboratories, Inc.

13

<b>Client Information (Sub Contract Lab)</b> Client Contact: Shipping/Receiving		Sampler: Lab PM: Hoerchler, Elizabeth M		Carrier Tracking No(s): 160-87918.1		COC No: 160-87918.1			
Company: TestAmerica Laboratories, Inc.		Phone: E-Mail: elizabeth.hoerchler@testamericainc.com		Analysis Requested		Page: Page 1 of 1			
Address: 2800 George Washington Way, City: Richland State, Zip: WA, 99352		Due Date Requested: 7/18/2016 TAT Requested (days):		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) SUB (Radon-226 by Radon Emanation - EPA 903-1)		Job #: 160-17883-1			
Phone: 509-375-3131(Tel) 509-375-5590(Fax)		PO #				Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify)			
Email: Project Name: Former Reid Hospital Site		Project #: 16005365 SSOW#:				Other:		Special Instructions/Note:	
Site:		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)				Total Number of Containers			
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time			Sample Type (C=Comp, G=grab)	Matrix		
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix	Special Instructions/Note:			
MW-7 (160-17883-1) <i>MSWNY</i>		6/20/16	16:50 Eastern	Water		X			
DUP-GW (160-17883-2) <i>MSWNS</i>		6/20/16	13:25 Eastern	Water		X			
MW-6 (160-17883-3) <i>MSWN6</i>		6/20/16	13:25 Eastern	Water		X			
<i>Job 070442</i>									
<i>506-51705</i>									
<b>Possible Hazard Identification</b> Level 1 radioactive Deliverable Requested: I, II, III, IV, Other (specify)						Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month ) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____						Special Instructions/QC Requirements:			
Relinquished by: <i>8 J</i> Date/Time: <i>6/29/16 1700</i> Company: _____		Relinquished by: _____ Date/Time: _____ Company: _____		Received by: <i>Bob Beck</i> Date/Time: <i>6-30-16/1015</i> Company: <i>TAL</i>		Relinquished by: _____ Date/Time: _____ Company: _____			
Relinquished by: _____ Date/Time: _____ Company: _____		Relinquished by: _____ Date/Time: _____ Company: _____		Relinquished by: _____ Date/Time: _____ Company: _____		Cooler Temperature(s) °C and Other Remarks:			
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:					



J6G070442

Sample Check-in List

Date/Time Received: 6-25-16/1015 30 Container GM Screen Result: (Airlock) 0 cpm Initials [B] Sample GM Screen Result (Sample Receiving) 0 cpm Initials [B]

Client: STL SDG #: 51705 SAF #: NA [B]

Lot Number: J66070442

Chain of Custody # 160-87918.1

Shipping Container ID or Air Bill Number : NA [B]

Samples received inside shipping container/cooler/box Yes [B] ] Continue with 1 through 4. Initial appropriate response. No [ ] ] Go to 5, add comment to #16.

- 1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [B] ]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B] ]
3. Cooler temperature: \_\_\_\_\_ °C NA [B] ]
4. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [B] ]

Item 5 through 16 for samples. Initial appropriate response.

- 5. Chain of Custody record present? Yes [B] ] No [ ] ]
6. Number of samples received (Each sample may contain multiple bottles): 3
7. Containers received: 3 x 4

8. Sample holding times exceeded? NA [ ] Yes [ ] No [B] ]

9. Samples have: \_\_\_\_\_ tape \_\_\_\_\_ hazard labels \_\_\_\_\_ custody seals [B] appropriate sample labels

10. Matrix: \_\_\_\_\_ A (FLT, Wipe, Solid, Soil) [B] I (Water) \_\_\_\_\_ S (Air, Niosh 7400) \_\_\_\_\_ T (Biological, Ni-63)

11. Samples: [B] are in good condition \_\_\_\_\_ are leaking \_\_\_\_\_ are broken
\_\_\_\_\_ have air bubbles (Only for samples requiring no head space) \_\_\_\_\_ Other \_\_\_\_\_

12. Sample pH appropriate for analysis requested Yes [B] ] No [ ] NA [ ] ]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO3 added and pH after addition on table)

13. Were any anomalies identified in sample receipt? Yes [ ] No [B] ]

14. Description of anomalies (include sample numbers): NA [B] ]

15. Sample Location, Sample Collector Listed on COC? \* Yes [ ] No [B] ]

\*For documentation only. No corrective action needed.

16. Additional Information: w/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:

Signature: [Signature] Date: 6-30-16

Client Notification needed? Yes [ ] No [ ] Date: \_\_\_\_\_
By: \_\_\_\_\_
Person contacted: \_\_\_\_\_

[X] No action necessary; process as is

Project Manager: [Signature] Date: 7-8-16

Analytical Data Package Prepared For  
**TESTAMERICA ST. LOUIS**

Radiochemical Analysis By  
**TestAmerica Inc**

*2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.*

Assigned Laboratory Code: TA-RL

Data Package Contains 16 Pages

Report No.: 69086

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
51706		EB-1 20160621-01(160-17910-4)	J6G070443-4	M8WPA1AA	9M8WPA10	6190032
		MW-2 20160621-01(160-17910-3)	J6G070443-3	M8WN91AA	9M8WN910	6190032
		MW-3 20160620-01(160-17910-6)	J6G070443-5	M8WPC1AA	9M8WPC10	6190032
		MW-5 20160620-01(160-17910-1)	J6G070443-1	M8WN71AA	9M8WN710	6190032
		MW-8 20160621-01(160-17910-2)	J6G070443-2	M8WN81AA	9M8WN810	6190032

## Certificate of Analysis

August 1, 2016

TestAmerica St. Louis  
13715 Rider Trail North  
Earth City, MO 63045

Attention: Elizabeth Hoerchler

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Date Received in Lab	:	June 30, 2016
Sample Type	:	Five (5) water
SDG Number	:	51706
Job Number	:	160-17910-1
Project Number/Name	:	Former Reid Hospital Site/16005365

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### CASE NARRATIVE

#### **I. Introduction**

On June 30, 2016, five samples were received at the TestAmerica Richland laboratory for radiochemical analysis. Upon receipt the samples were assigned to Lot Number J6G070443 with the laboratory ID number corresponding to the client ID as shown on the cover page.

#### **II. Sample Receipt**

The samples were received in good condition; the sample volume per sample was less than 500 mL, no other anomalies were noted upon check-in.

#### **III. Analytical Results/Methodology**

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

**Alpha Scintillation Counting**  
Radium-226 by method RL-RA-001 (EPA 903.1)

**IV. Quality Control**

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.


**V. Comments**

**Alpha Scintillation Counting**

There was insufficient sample volume received to provide a batch duplicate. A second LCS was prepared and analyzed with the batch to show precision and accuracy measurements. Except as noted, the LCS, LCSD, batch blank and sample results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with the SOW and/or NELAC, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

 **Erika Jordan**  
**2016.08.01**  
**09:49:11 -07'00'**

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Erika Jordan  
Manager of Project Management



## Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	TestAmerica Richland's SOP No.
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

**Results in this report relate only to the sample(s) analyzed.**

### Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship,  $R = \text{constants} * f(x,y,z,\dots)$ . The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties ( $u_i$ ) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty ( $u_c$ ) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ( $S/\sqrt{n}$ ), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

## Report Definitions

<b>Action Lev</b>	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
<b>Batch</b>	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
<b>Bias</b>	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or TestAmerica.
<b>Count Error (#s)</b>	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
<b>CSU (#s) <i>u<sub>c</sub> Combined Standard Uncert.</i></b>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u<sub>c</sub> the combined standard uncertainty</i> . The uncertainty is absolute and in the same units as the result.
<b>(#s), Coverage Factor</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
<b>CRDL (RL)</b>	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
<b>Lc</b>	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \sqrt{2 * (BkgrndCnt / BkgrndCntMin) / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
<b>Lot-Sample No</b>	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
<b>MDC MDA MDL</b>	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \sqrt{((BkgrndCnt / BkgrndCntMin) / SCntMin) + 2.71 / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . For LSC methods the batch blank is used as a measure of the background variability.
<b>Primary Detector</b>	The instrument identifier associated with the analysis of the sample aliquot.
<b>Ratio U-234/U-238</b>	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
<b>Rst/MDC</b>	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Rst/TotUcert</b>	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Report DB No</b>	Sample Identifier used by the report system. The number is based upon the first five digits of the <b>Work Order</b> Number.
<b>RER</b>	The equation Replicate Error Ratio = $(S-D) / [\sqrt{TPUs^2 + TPUd^2}]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
<b>SDG</b>	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
<b>Sum Rpt Alpha Spec Rst(s)</b>	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
<b>Work Order</b>	The LIMS software assign test specific identifier.
<b>Yield</b>	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

**Sample Results Summary**

Date: 01-Aug-16

**TestAmerica Inc TA-RL**

Ordered by Method, Batch No., Client Sample ID.

Report No. : 69086

SDG No: 51706

Batch	Client Id Work Order	Parameter	Result +- CSU ( 2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RER2
6190032	RL-RA-001								
	<b>EB-1 20160621-01(160-17910-4)</b>								
	M8WPA1AA	RADIUM-226	1.90E-02 +- 1.6E-01	U	PCI_L	90%	2.66E-01	1.00E+00	
	<b>MW-2 20160621-01(160-17910-3)</b>								
	M8WN91AA	RADIUM-226	5.58E-01 +- 2.0E-01		PCI_L	84%	2.00E-01	1.00E+00	
	<b>MW-3 20160620-01(160-17910-6)</b>								
	M8WPC1AA	RADIUM-226	5.01E-01 +- 2.0E-01		PCI_L	87%	2.49E-01	1.00E+00	
	<b>MW-5 20160620-01(160-17910-1)</b>								
	M8WN71AA	RADIUM-226	7.35E-01 +- 2.8E-01		PCI_L	58%	3.04E-01	1.00E+00	
	<b>MW-8 20160621-01(160-17910-2)</b>								
	M8WN81AA	RADIUM-226	4.30E-01 +- 1.9E-01		PCI_L	78%	2.31E-01	1.00E+00	

No. of Results: 5

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TestAmerica Inc      RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 rptTALRchSaSum    U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan  
 mary2 V5.6 A2002    software.

**QC Results Summary**  
**TestAmerica Inc TA-RL**  
 Ordered by Method, Batch No, QC Type,.

Date: 01-Aug-16

Report No. : 69086

SDG No.: 51704

Batch	Work Order	Parameter	Result +- CSU ( 2 s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
<b>RL-RA-001</b>									
6190032 BLANK QC,									
	M8WRX1AA	RADIUM-226	-5.30E-02 +- 1.1E-01	U	PCI_L	88%			2.07E-01
6190032 LCS,									
	M8WRX1AD	RADIUM-226	1.66E+00 +- 5.0E-01		PCI_L	85%	123%	0.2	2.24E-01
	M8WRX1AC	RADIUM-226	1.66E+00 +- 5.0E-01		PCI_L	98%	124%	0.2	1.61E-01
<b>No. of Results: 3</b>									

TestAmerica Inc Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSummary V5.6 A2002 U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51706

Collection Date: 6/21/2016 1:45:00 PM

Lot-Sample No.: J6G070443-4

Report No. : 69086

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: EB-1 20160621-01(160-17910-4)

COC No. :

Matrix: WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032	RL-RA-001				Work Order: M8WPA1AA		Report DB ID: 9M8WPA10					
RADIUM-226	1.90E-02	U	1.6E-01	1.6E-01	2.66E-01	PCI_L	90%	0.07	7/30/16 03:11 p		1.0603	ASCESD
						1.27E-01	1.00E+00	0.25			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc	SDG: 51706	Collection Date: 6/21/2016 10:05:00 AM
Lot-Sample No.: J6G070443-3	Report No. : 69086	Received Date: 6/30/2016 10:15:00 AM
Client Sample ID: MW-2 20160621-01(160-17910-3)	COC No. :	Matrix: WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032	RL-RA-001				Work Order: M8WN91AA		Report DB ID: 9M8WN910					
RADIUM-226	<b>5.58E-01</b>		1.6E-01	2.0E-01	2.00E-01	PCI_L	84%	(2.8)	7/30/16 03:11 p		1.0459	ASCDUE
						9.27E-02	1.00E+00	(5.6)			L	

No. of Results: 1      Comments:

TestAmerica Inc    MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample    U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51706

Collection Date: 6/20/2016 5:40:00 PM

Lot-Sample No.: J6G070443-5

Report No. : 69086

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: MW-3 20160620-01(160-17910-6)

COC No. :

Matrix: WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032	RL-RA-001				Work Order: M8WPC1AA		Report DB ID: 9M8WPC10					
RADIUM-226	5.01E-01		1.7E-01	2.0E-01	2.49E-01	PCI_L	87%	(2.)	7/30/16 03:11 p		1.0724	ASCFRM
						1.18E-01	1.00E+00	(5.)			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51706

Collection Date: 6/20/2016 1:15:00 PM

Lot-Sample No.: J6G070443-1

Report No. : 69086

Received Date: 6/30/2016 10:15:00 AM

Client Sample ID: MW-5 20160620-01(160-17910-1)

COC No. :

Matrix: WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032	RL-RA-001				Work Order: M8WN71AA		Report DB ID: 9M8WN710					
RADIUM-226	7.35E-01		2.3E-01	2.8E-01	3.04E-01	PCI_L	58%	(2.4)	7/30/16 03:00 p		1.0491	ASCBMA
						1.42E-01	1.00E+00	(5.3)			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002



**FORM I**  
**SAMPLE RESULTS**

Date: 01-Aug-16

<b>Lab Name:</b> TestAmerica Inc	<b>SDG:</b> 51706	<b>Collection Date:</b> 6/21/2016 10:58:00 AM
<b>Lot-Sample No.:</b> J6G070443-2	<b>Report No. :</b> 69086	<b>Received Date:</b> 6/30/2016 10:15:00 AM
<b>Client Sample ID:</b> MW-8 20160621-01(160-17910-2)	<b>COC No. :</b>	<b>Matrix:</b> WATER WG

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6190032			RL-RA-001			Work Order: M8WN81AA			Report DB ID: 9M8WN810			
RADIUM-226	<b>4.30E-01</b>		1.6E-01	1.9E-01	2.31E-01	PCI_L	78%	(1.9)	7/30/16 03:11 p		1.0712	ASCCSC
						1.08E-01	1.00E+00	(4.4)			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM II**  
**BLANK RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51704

Matrix: WATER

Report No. : 69086

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
<b>Batch:</b> 6190032	RL-RA-001											
RADIUM-226	-5.30E-02	U	1.1E-01	1.1E-01	2.07E-01	PCI_L	88%	-0.26	7/30/16 03:11 p		1.0071	ASCHMA
					9.63E-02	1.00E+00		-0.94			L	

No. of Results: 1      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchBlank      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V5.6 A2002

**FORM II**  
**LCS RESULTS**

Date: 01-Aug-16

Lab Name: TestAmerica Inc

SDG: 51704

Matrix: WATER

Report No. : 69086

Parameter	Result	Qual	Count Error ( 2 s)	CSU ( 2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
<b>Batch:</b> 6190032	RL-RA-001					<b>Work Order:</b> M8WRX1AC		<b>Report DB ID:</b> M8WRX1CS					
RADIUM-226	1.66E+00		2.0E-01	5.0E-01	1.61E-01	PCI_L	98%	1.34E+00	1.5E-02	124%	7/30/16 03:11 p	1.0092	ASCKMF
							<b>Rec Limits:</b>	75	125	0.2		L	
<b>Batch:</b> 6190032	RL-RA-001					<b>Work Order:</b> M8WRX1AD		<b>Report DB ID:</b> M8WRX1DS					
RADIUM-226	1.66E+00		2.4E-01	5.0E-01	2.24E-01	PCI_L	85%	1.34E+00	1.5E-02	123%	7/30/16 05:13 p	1.0045	ASCPMB
							<b>Rec Limits:</b>	75	125	0.2		L	

**No. of Results:** 2      **Comments:**

TestAmerica Inc    Bias    - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs  
V5.6 A2002

**TestAmerica St. Louis**

13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

**Chain of Custody Record**



**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information (Sub Contract Lab)</b>		Lab PM: Hoerchler, Elizabeth M	Carrier Tracking No(s):	COC No: 160-87918.1
Client Contact: Shipping/Receiving		E-Mail: elizabeth.hoerchler@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		<b>Analysis Requested</b>		
Address: 2800 George Washington Way,		Field Filtered Sample (Yes or No) <input type="checkbox"/> Perform MS/MS (Yes or No) <input type="checkbox"/> SUB (Radium-226 by Radon Emanation - EPA 903.1) <input checked="" type="checkbox"/>	Total Number of Containers	Job #: 160-17910-1

Due Date Requested: 7/19/2016	TAT Requested (days):		Preservation Codes: A - HCL                  M - Hexane B - NaOH                N - None C - Zn Acetate        O - AsNaO2 D - Nitric Acid        P - Na2O4S E - NaHSO4            Q - Na2SO3 F - MeOH                R - Na2S2O3 G - Amchlor            S - H2SO4 H - Ascorbic Acid     T - TSP Dodecahydrate I - Ice                    U - Acetone J - DI Water            V - MCAA K - EDTA                W - ph 4-5 L - EDA                  Z - other (specify)
City: Richland	PO #:		
State, Zip: WA, 99352	WO #:		
Phone: 509-375-3131(Tel) 509-375-5590(Fax)	Project #: 16005365		
Email:	SSOW#:		
Project Name: Former Reid Hospital Site	Site:		

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/foil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MS (Yes or No)												Special Instructions/Note:
MW-5 20160620-01 (160-17910-1) <i>mswn7</i>	6/20/16	13:15 Eastern		Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	X											
MW-8 20160621-01 (160-17910-2) <i>mswn8</i>	6/21/16	10:58 Eastern		Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	X											
MW-2 20160621-01 (160-17910-3) <i>mswn9</i>	6/21/16	10:05 Eastern		Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	X											
EB-1 20160621-01 (160-17910-4) <i>mswpa</i>	6/21/16	13:45 Eastern		Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	X											
MW-3 20160620-01 (160-17910-6) <i>mswpc</i>	6/20/16	17:40 Eastern		Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	X											



*J66070443  
SD6-51706*

<b>Possible Hazard Identification</b>	<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b> <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months
---------------------------------------	--

Level 1 radioactive		Special Instructions/QC Requirements:	
Deliverable Requested: I, II, III, IV, Other (specify)			
Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by:	Date/Time:	Company:	Received by: <i>Deek J Stock</i> Date/Time: <i>6.30.16/1015</i> Company: <i>TALR</i>
Relinquished by:	Date/Time:	Company:	Received by:     Date/Time:     Company:
Relinquished by:	Date/Time:	Company:	Received by:     Date/Time:     Company:

Cooler Temperature(s) °C and Other Remarks:
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No     Custody Seal No.:

Sample Check-in List

Date/Time Received: 6-30-16/1015 Container GM Screen Result: (Airlock) 0 cpm Initials [B]
Sample GM Screen Result (Sample Receiving) 0 cpm Initials [B]

Client: STL SDG #: S1704 SAF #: NA [B]

Lot Number: J66070443

Chain of Custody # 160-87918.1

Shipping Container ID or Air Bill Number : NA [B]

Samples received inside shipping container/cooler/box Yes [B] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

- 1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [B]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B]
3. Cooler temperature: \_\_\_\_\_ °C NA [B]
4. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [B]

Item 5 through 16 for samples. Initial appropriate response.

- 5. Chain of Custody record present? Yes [B] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 5
7. Containers received: 5x4

- 8. Sample holding times exceeded? NA [ ] Yes [ ] No [B]
9. Samples have: \_\_\_\_\_ tape \_\_\_\_\_ hazard labels \_\_\_\_\_ custody seals [B] appropriate sample labels
10. Matrix: \_\_\_\_\_ A (FLT, Wipe, Solid, Soil) [B] I (Water) \_\_\_\_\_ S (Air, Niosh 7400) \_\_\_\_\_ T (Biological, Ni-63)

11. Samples: [B] are in good condition \_\_\_\_\_ are leaking \_\_\_\_\_ are broken
\_\_\_\_\_ have air bubbles (Only for samples requiring no head space) \_\_\_\_\_ Other \_\_\_\_\_

12. Sample pH appropriate for analysis requested Yes [B] No [ ] NA [ ]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO3 added and pH after addition on table)

- 13. Were any anomalies identified in sample receipt? Yes [ ] No [B]
14. Description of anomalies (include sample numbers): NA [B]

15. Sample Location, Sample Collector Listed on COC? \* Yes [ ] No [B]
\*For documentation only. No corrective action needed.

16. Additional Information: w/A Very limited volume. Less than 500mls.
[B 7-7-16]

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:

Signature: [Signature] Date: 6-30-16

Client Notification needed? Yes [ ] No [ ] Date: \_\_\_\_\_
By: \_\_\_\_\_
Person contacted: \_\_\_\_\_

[X] No action necessary; process as is

Project Manager: [Signature] Date: 7-2-16

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis  
13715 Rider Trail North  
Earth City, MO 63045  
Tel: (314)298-8566

TestAmerica Job ID: 160-17824-1

Client Project/Site: Former Reid Hospital Site  
Revision: 1

For:

Environmental Resources Management Inc  
8425 Woodfield Crossing Blvd  
Suite 560-W  
Indianapolis, Indiana 46240

Attn: Mr. Aaron Friedrich

*Elizabeth M. Hoerchler*

Authorized for release by:  
9/15/2016 4:14:07 PM

Elizabeth Hoerchler, Project Mgmt. Assistant  
(314)298-8566  
[elizabeth.hoerchler@testamericainc.com](mailto:elizabeth.hoerchler@testamericainc.com)

### LINKS

Review your project  
results through  
**Total Access**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*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.*

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# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Job ID: 160-17824-1**

**Laboratory: TestAmerica St. Louis**

**Narrative**

## CASE NARRATIVE

**Client: Environmental Resources Management Inc**

**Project: Former Reid Hospital Site**

**Report Number: 160-17824-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

### **RECEIPT**

The samples were received on 06/16/2016; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.3° C, 2.4° C and 2.6° C.

### **VOLATILE ORGANIC COMPOUNDS BY GC/MS**

Sample SB-30 (1-3') 20160614-01 (160-17824-1) was analyzed for Volatile Organic Compounds by GC/MS in accordance with EPA SW-846 Method 8260C. The samples were prepared and analyzed on 06/21/2016.

The continuing calibration verification (CCV) associated with batch 160-257269 recovered above the upper control limit for Freon-113. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: (CCVIS 160-257269/5).

The following compounds did not meet the minimum relative response factor limits in the continuing calibration verification (CCV) associated with batch 160-257269: 2-Butanone, Methyl acetate, and Acetone. A low level CCV was analyzed at the base reporting limit of 5ug/L and the affected analytes were detected. Target analytes recovering above the reporting limit will be qualified and reported. (CCVIS



# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Job ID: 160-17824-1 (Continued)

### Laboratory: TestAmerica St. Louis (Continued)

160-257269/5)

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-257296 and analytical batch 160-257269. LCS/LCSD were performed in order to demonstrate accuracy and replicate precision. SB-30 (1-3') 20160614-01 (160-17824-1)

Internal standard (ISTD) response for the following sample in batch 160-257269 was outside of lower acceptance limits, indicating a positive bias: SB-30 (1-3') 20160614-01 (160-17824-1). There were no detections above the reporting limit in the internal standard's associated retention time range. Results are reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### VOLATILE ORGANIC COMPOUNDS (GC MS)

Sample VOC TRIP BLANK 20160615-01 (160-17824-11) was analyzed for volatile organic compounds (GC MS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 06/28/2016.

The continuing calibration verification (CCV) associated with batch 160-258396 recovered above the upper control limit for Chloroethane. The sample associated with this CCV was non-detect for the affected analyte; therefore, the data have been reported. (CCVIS 160-258396/3)

The following compounds did not meet the minimum relative response factor limits in the continuing calibration verification (CCV) associated with batch 160-258396: Acetone, Methyl acetate and 2-Butanone (MEK). A low-level LOQV was analyzed at the reporting limit (5ug/L) and the affected analytes were detected. Target analytes recovering above the reporting limit will be qualified and reported. (CCVIS 160-258396/3)

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 160-258396. The only associated sample is a Trip Blank. VOC TRIP BLANK 20160615-01 (160-17824-11)

According to the COC, the following sample in batch 160-258396 was presumed to be preserved to a pH < 2: VOC TRIP BLANK 20160615-01 (160-17824-11). Due to the potential loss of volatile constituents, VOA vials are not checked for pH preservation until the time of analysis. Sample pH was not less than 2. Sample was analyzed outside the 7 day, unpreserved, holding time.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### SEMIVOLATILE ORGANIC COMPOUNDS (GC/MS)

Samples SB-19 (6-8') 20160615-01 (160-17824-2), SB-19 (0-2') (160-17824-3), DUP-A 20160614-01 (160-17824-19), SB-16 (0-2') 20160615-01 (160-17824-23), SB-16 (8-12') 20160615-01 (160-17824-24), SB-18 (0-2') (160-17824-25) and SB-17 (0-2') 20160615-01 (160-17824-28) were analyzed for Semivolatile Organic Compounds (GC/MS) in accordance with EPA SW-846 Method 8270D. The samples were prepared on 06/24/2016 and analyzed on 07/11/2016 and 07/12/2016.

Internal standard responses were outside of acceptance limits for the following sample in preparation batch 160-257942 and analytical batch 160-259984: SB-18 (0-2') (160-17824-25). The sample shows evidence of matrix interference.

The following sample in batch 160-260156 was diluted to bring the concentration of target analytes within the calibration range: SB-18 (0-2') (160-17824-25). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### SEMIVOLATILE ORGANIC COMPOUNDS

Samples SB-22 (16-20') 20160614-01 (160-17824-18), SB-22 (0-2') 20160614-01 (160-17824-20), DUP-B 20160615-01 (160-17824-29), SB-17 (6-8') 20160615-01 (160-17824-31) and SB-18 (6-8') 20160615-01 (160-17824-32) were analyzed for Semivolatile Organic Compounds in accordance with EPA SW-846 Method 8270D\_SIM. The samples were prepared on 06/24/2016 and analyzed on 07/14/2016.

Due to the dark, viscous matrices, the following samples could not be concentrated to the final method required volume: SB-19 (0-2')

# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Job ID: 160-17824-1 (Continued)

### Laboratory: TestAmerica St. Louis (Continued)

(160-17824-3), SB-16 (0-2') 20160615-01 (160-17824-23) and SB-18 (0-2') (160-17824-25). The reporting limits (RLs) are elevated proportionately.

The following samples in batch 160-259984 were extracted for SIM analysis with SIM concentration level QC which is much lower than scan concentration level QC. These samples had large target analyte hits so the laboratory analyzed them by scan analysis. The surrogate/spike recoveries were left in however most of the values are around MDL levels. The data is reported with this narrative. SB-19 (6-8') 20160615-01 (160-17824-2), SB-19 (0-2') (160-17824-3), DUP-A 20160614-01 (160-17824-19), SB-16 (0-2') 20160615-01 (160-17824-23), SB-16 (8-12') 20160615-01 (160-17824-24), SB-18 (0-2') (160-17824-25), SB-17 (0-2') 20160615-01 (160-17824-28), SB-17 (0-2') 20160615-01 (160-17824-28[MS]), SB-17 (0-2') 20160615-01 (160-17824-28[MSD]) and (MB 160-257942/1-A)

Due to the high concentration of target analytes, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 160-257942 and analytical batch 160-260555 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria. SB-22 (0-2') 20160614-01 (160-17824-20[MS]) and SB-22 (0-2') 20160614-01 (160-17824-20[MSD])

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### PCB CONGENERS

Samples SB-28 (0-2') 20160613-01 (160-17824-13), SB-28 (17-20') 20160614-01 (160-17824-17), SB-22 (16-20') 20160614-01 (160-17824-18), DUP-A 20160614-01 (160-17824-19) and SB-22 (0-2') 20160614-01 (160-17824-20) were analyzed for PCB Congeners in accordance with EPA SW-846 Method 8082A. The samples were prepared on 06/22/2016 and analyzed on 06/29/2016.

The following samples was diluted due to the nature of the sample matrix for sample 13: SB-28 (0-2') 20160613-01 (160-17824-13), DUP-A 20160614-01 (160-17824-19), SB-22 (0-2') 20160614-01 (160-17824-20), SB-22 (0-2') 20160614-01 (160-17824-20[MS]) and SB-22 (0-2') 20160614-01 (160-17824-20[MSD]) The matrix caused the surrogate to fail high for DCB for all listed samples.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### DIOXINS AND FURANS (HRGC/HRMS)

Samples SB-28 (3-5') 20160613-01 (160-17824-21), SB-35 (0-2') 20160615-01 (160-17824-22) and DUP-C 20160615-01 (160-17824-30) were analyzed for Dioxins and Furans (HRGC/HRMS) in accordance with SW-846 Method 8290A. The samples were prepared on 07/05/2016 and 07/15/2016 and analyzed on 07/14/2016 and 07/20/2016.

The laboratory control sample (LCS) for preparation batch 320-116529 and 320-118093 and analytical batch 320-117801 recovered outside control limits for the following analytes: 1,2,3,4,6,7,8-HpCDD and OCDD. The associated sample was re-prepared outside holding time. Both sets of data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### METALS (ICPMS)

Samples SB-19 (6-8') 20160615-01 (160-17824-2), SB-19 (0-2') (160-17824-3), SB-24 (0-2') 20160615-01 (160-17824-4), SB-24 (12-16') 20160614-01 (160-17824-5), SB-25 (12-16') 20160614-01 (160-17824-6), SB-27 (18-22') 20160614-01 (160-17824-7), SB-27 (0-2') (160-17824-8), SB-25 (0-2') 20160614-01 (160-17824-9), SB-19 (8-12') 20160615-01 (160-17824-10), SB-23 (12-16') 20160614-01 (160-17824-12), SB-28 (0-2') 20160613-01 (160-17824-13), SB-26 (12-16') 20160613-01 (160-17824-14), SB-23 (1-2') 20160614-01 (160-17824-15), SB-26 (0-2') 20160614-01 (160-17824-16), SB-28 (17-20') 20160614-01 (160-17824-17), SB-22 (16-20') 20160614-01 (160-17824-18), DUP-A 20160614-01 (160-17824-19), SB-22 (0-2') 20160614-01 (160-17824-20), SB-35 (0-2') 20160615-01 (160-17824-22), SB-16 (0-2') 20160615-01 (160-17824-23), SB-16 (8-12') 20160615-01 (160-17824-24), SB-18 (0-2') (160-17824-25), SB-17 (16-20') 20160615-01 (160-17824-26), SB-18 (16-20') 20160615-01 (160-17824-27), SB-17 (0-2') 20160615-01 (160-17824-28), DUP-B 20160615-01 (160-17824-29), SB-17 (6-8') 20160615-01 (160-17824-31) and SB-18 (6-8') 20160615-01 (160-17824-32) were analyzed for metals (ICPMS) in accordance with EPA SW-846 Methods 6020A. The samples were prepared on 06/29/2016 and analyzed on 07/07/2016.

The following samples in preparation batch 160-258403 and analytical batch 160-259625 were diluted due to the nature of the sample matrix. The samples were high in salts, which cause internal standard and QC failures when the samples are run at a lesser dilution: SB-19 (6-8') 20160615-01 (160-17824-2), SB-19 (0-2') (160-17824-3), SB-24 (0-2') 20160615-01 (160-17824-4), SB-24 (12-16') 20160614-01 (160-17824-5), SB-25 (12-16') 20160614-01 (160-17824-6), SB-27 (18-22') 20160614-01 (160-17824-7), SB-27 (0-2')

# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Job ID: 160-17824-1 (Continued)

### Laboratory: TestAmerica St. Louis (Continued)

(160-17824-8), SB-25 (0-2') 20160614-01 (160-17824-9), SB-19 (8-12') 20160615-01 (160-17824-10), SB-23 (12-16') 20160614-01 (160-17824-12), SB-28 (0-2') 20160613-01 (160-17824-13), SB-26 (12-16') 20160613-01 (160-17824-14), SB-23 (1-2') 20160614-01 (160-17824-15), SB-26 (0-2') 20160614-01 (160-17824-16), SB-28 (17-20') 20160614-01 (160-17824-17), SB-22 (16-20') 20160614-01 (160-17824-18), DUP-A 20160614-01 (160-17824-19), SB-22 (0-2') 20160614-01 (160-17824-20), SB-22 (0-2') 20160614-01 (160-17824-20[MSJ]), SB-22 (0-2') 20160614-01 (160-17824-20[MSD]) and (160-17824-A-20-E SD). Elevated reporting limits (RLs) are provided.

Due to linear range check (LRC) failures, the linear range for lithium has been lowered to the concentration of the highest calibration standard (200ppb). The LCS in preparation batch 160-258403 and analytical batch 160-259625 was above the linear range, but was within acceptable limits. (LCS 160-258403/2-A)

In preparation batch 160-258403 and analytical batch 160-259625 the MS (MSD) recovery and precision for lead is outside the established QC limits. The MS/MSD is a multiple element spiking solution. The majority of elements in the spiking solution are either within acceptable criteria or the concentration is four times greater than the spiked amount, making recovery unreliable. This indicates that a matrix interference is present in the sample. Method performance is demonstrated by acceptable LCS recovery. No further action is required. SB-22 (0-2') 20160614-01 (160-17824-20[MSJ]) and SB-22 (0-2') 20160614-01 (160-17824-20[MSD])

The following samples in preparation batch 160-258404 and analytical batch 160-259626 were diluted due to the nature of the sample matrix. The samples were high in salts, which cause internal standard and QC failures when the samples are run at a lesser dilution: SB-35 (0-2') 20160615-01 (160-17824-22), SB-16 (0-2') 20160615-01 (160-17824-23), SB-16 (8-12') 20160615-01 (160-17824-24), SB-18 (0-2') (160-17824-25), SB-17 (16-20') 20160615-01 (160-17824-26), SB-18 (16-20') 20160615-01 (160-17824-27), SB-17 (0-2') 20160615-01 (160-17824-28), SB-17 (0-2') 20160615-01 (160-17824-28[MSJ]), SB-17 (0-2') 20160615-01 (160-17824-28[MSD]), DUP-B 20160615-01 (160-17824-29), SB-17 (6-8') 20160615-01 (160-17824-31), SB-18 (6-8') 20160615-01 (160-17824-32) and (160-17824-A-28-D SD). Elevated reporting limits (RLs) are provided.

Due to linear range check (LRC) failures, the linear range for lithium has been lowered to the concentration of the highest calibration standard (200ppb). The LCS in preparation batch 160-258404 and analytical batch 160-259626 was above the linear range, but was within acceptable limits. (LCS 160-258404/2-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### **PERCENT SOLIDS**

Samples SB-30 (1-3') 20160614-01 (160-17824-1), SB-19 (6-8') 20160615-01 (160-17824-2), SB-19 (0-2') (160-17824-3), SB-24 (0-2') 20160615-01 (160-17824-4), SB-24 (12-16') 20160614-01 (160-17824-5), SB-25 (12-16') 20160614-01 (160-17824-6), SB-27 (18-22') 20160614-01 (160-17824-7), SB-27 (0-2') (160-17824-8), SB-25 (0-2') 20160614-01 (160-17824-9), SB-19 (8-12') 20160615-01 (160-17824-10), SB-23 (12-16') 20160614-01 (160-17824-12), SB-28 (0-2') 20160613-01 (160-17824-13), SB-26 (12-16') 20160613-01 (160-17824-14), SB-23 (1-2') 20160614-01 (160-17824-15), SB-26 (0-2') 20160614-01 (160-17824-16), SB-28 (17-20') 20160614-01 (160-17824-17), SB-22 (16-20') 20160614-01 (160-17824-18), DUP-A 20160614-01 (160-17824-19), SB-22 (0-2') 20160614-01 (160-17824-20), SB-28 (3-5') 20160613-01 (160-17824-21), SB-35 (0-2') 20160615-01 (160-17824-22), SB-16 (0-2') 20160615-01 (160-17824-23), SB-16 (8-12') 20160615-01 (160-17824-24), SB-18 (0-2') (160-17824-25), SB-17 (16-20') 20160615-01 (160-17824-26), SB-18 (16-20') 20160615-01 (160-17824-27), SB-17 (0-2') 20160615-01 (160-17824-28), DUP-B 20160615-01 (160-17824-29), DUP-C 20160615-01 (160-17824-30), SB-17 (6-8') 20160615-01 (160-17824-31) and SB-18 (6-8') 20160615-01 (160-17824-32) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 06/21/2016 and 06/30/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### **RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)**

Samples SB-19 (0-2') (160-17824-3), SB-24 (0-2') 20160615-01 (160-17824-4), SB-24 (12-16') 20160614-01 (160-17824-5), SB-25 (12-16') 20160614-01 (160-17824-6), SB-27 (18-22') 20160614-01 (160-17824-7), SB-27 (0-2') (160-17824-8), SB-25 (0-2') 20160614-01 (160-17824-9), SB-19 (8-12') 20160615-01 (160-17824-10), SB-23 (12-16') 20160614-01 (160-17824-12), SB-28 (0-2') 20160613-01 (160-17824-13), SB-26 (12-16') 20160613-01 (160-17824-14), SB-23 (1-2') 20160614-01 (160-17824-15), SB-26 (0-2') 20160614-01 (160-17824-16), SB-28 (17-20') 20160614-01 (160-17824-17), SB-22 (16-20') 20160614-01 (160-17824-18), DUP-A 20160614-01 (160-17824-19), SB-22 (0-2') 20160614-01 (160-17824-20), SB-35 (0-2') 20160615-01 (160-17824-22), SB-16 (0-2') 20160615-01 (160-17824-23), SB-16 (8-12') 20160615-01 (160-17824-24), SB-18 (0-2') (160-17824-25), SB-17 (16-20') 20160615-01 (160-17824-26), SB-18 (16-20') 20160615-01 (160-17824-27), SB-17 (0-2') 20160615-01 (160-17824-28) and DUP-B 20160615-01 (160-17824-29) were

# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Job ID: 160-17824-1 (Continued)

### Laboratory: TestAmerica St. Louis (Continued)

analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA 901.1. The samples were leached on 06/17/2016, prepared on 06/21/2016 and analyzed on 07/12/2016.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### GROSS ALPHA AND GROSS BETA RADIOACTIVITY

Samples SB-19 (0-2') (160-17824-3), SB-24 (0-2') 20160615-01 (160-17824-4), SB-24 (12-16') 20160614-01 (160-17824-5), SB-25 (12-16') 20160614-01 (160-17824-6), SB-27 (18-22') 20160614-01 (160-17824-7), SB-27 (0-2') (160-17824-8), SB-25 (0-2') 20160614-01 (160-17824-9), SB-19 (8-12') 20160615-01 (160-17824-10), SB-23 (12-16') 20160614-01 (160-17824-12), SB-28 (0-2') 20160613-01 (160-17824-13), SB-26 (12-16') 20160613-01 (160-17824-14), SB-23 (1-2') 20160614-01 (160-17824-15), SB-26 (0-2') 20160614-01 (160-17824-16), SB-28 (17-20') 20160614-01 (160-17824-17), SB-22 (16-20') 20160614-01 (160-17824-18), DUP-A 20160614-01 (160-17824-19), SB-22 (0-2') 20160614-01 (160-17824-20), SB-35 (0-2') 20160615-01 (160-17824-22), SB-16 (0-2') 20160615-01 (160-17824-23), SB-16 (8-12') 20160615-01 (160-17824-24), SB-18 (0-2') (160-17824-25), SB-17 (16-20') 20160615-01 (160-17824-26), SB-18 (16-20') 20160615-01 (160-17824-27), SB-17 (0-2') 20160615-01 (160-17824-28) and DUP-B 20160615-01 (160-17824-29) were analyzed for Gross Alpha and Gross Beta Radioactivity in accordance with SW-846 Method 9310. The samples were leached on 06/17/2016, and prepared and analyzed on 07/11/2016 and 07/12/2016.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



### Chain of Custody Record

<b>Client Information</b>		Sampler: <u>Austin Taylor / Chris B.</u>		Lab PM: Hoerchler, Elizabeth M		Carrier Tracking No(s):		COC No: 160-4224-2057.1																																																																										
Client Contact: Austin Taylor		Phone: <u>317-439-9403 / 417-416-28</u>		E-Mail: <u>elizabeth.hoerchler@testamericainc.com</u>				Page: Page 1 of 1																																																																										
Company: Environmental Resources Management Inc				<b>Analysis Requested</b>						Job #:																																																																								
Address: 8425 Woodfield Crossing Blvd Suite 560-W				Due Date Requested:		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Field Filtered Sample (Yes or No)</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Perform MS/MSD (Yes or No)</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Arsenic</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Chromium</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Lead</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Thallium</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Dioxins</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Radio nucleides</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Lithium</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">PAHs</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">PCBs</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">VOCs</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Total Number of containers</td> </tr> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Sample Identification</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Sample Date</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Sample Time</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Sample Type (C=comp, G=grab)</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Matrix (W=water, S=solid, D=waste/oil, BT=Tissue, A=Air)</td> <td colspan="8"></td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Preservation Codes:</td> </tr> <tr> <td colspan="4"></td> <td colspan="2">TAT Requested (days): <u>standard</u></td> <td colspan="6"></td> <td colspan="2">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</td> </tr> <tr> <td colspan="4"></td> <td colspan="2">PO #: Purchase Order not required</td> <td colspan="6"></td> <td colspan="2">M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - ph 4-5 Z - other (specify)</td> </tr> <tr> <td colspan="4"></td> <td colspan="2">WO #:</td> <td colspan="6"></td> <td colspan="2">Other:</td> </tr> </table>						Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Arsenic	Chromium	Lead	Thallium	Dioxins	Radio nucleides	Lithium	PAHs	PCBs	VOCs	Total Number of containers	Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, D=waste/oil, BT=Tissue, A=Air)									Preservation Codes:					TAT Requested (days): <u>standard</u>								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						PO #: Purchase Order not required								M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - ph 4-5 Z - other (specify)						WO #:								Other:		Preservation Codes:	
Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Arsenic	Chromium	Lead	Thallium							Dioxins	Radio nucleides	Lithium	PAHs	PCBs	VOCs	Total Number of containers																																																																
Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, D=waste/oil, BT=Tissue, A=Air)									Preservation Codes:																																																																					
				TAT Requested (days): <u>standard</u>														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																																																																
				PO #: Purchase Order not required														M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - ph 4-5 Z - other (specify)																																																																
				WO #:								Other:																																																																						
				Project #: 16005365								Special Instructions/Note:																																																																						
				SSOW#:																																																																														
				Project Name: Former Reid Hospital Site																																																																														
				Site:																																																																														
				Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, D=waste/oil, BT=Tissue, A=Air)																																																																								
				Preservation Code:																																																																														
SB-30 (1-3')				6-14-16		1535		G		S																																																																								
SB-19 (6-8')				6-15-16		1210		G		S																																																																								
SB-19 (0-2')				6-15-16		0915																																																																												
SB-24 (0-2')				6-14-16		1610																																																																												
SB-24 (12-16')				6-14-16		1635																																																																												
SB-25 (12-16')				6-14-16		1845																																																																												
SB-27 (18-22')				6-14-16		1745																																																																												
SB-27 (0-2')				6-14-16		1720																																																																												
SB-25 (0-2')				6-14-16		1840																																																																												
SB-19 (8-12')				6-15-16		0930																																																																												
VOC Trip Blank				6-15-16		-		-		W																																																																								



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9/15/2016





TestAmerica St. Louis

13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information</b>		Sampler: <b>A. Taylor / C. Burrows</b>		Lab PM: Hoerchler, Elizabeth M		Carrier Tracking No(s):		COC No: 160-4224-2057.1	
Client Contact: Austin Taylor		Phone: 317-439-9403 / 417-496-301 2801		E-Mail: elizabeth.hoerchler@testamericainc.com				Page: Page 1 of 1	
Company: Environmental Resources Management Inc		Due Date Requested:		<b>Analysis Requested</b>		Job #:		<b>Preservation Codes:</b> A - HCL                      M - Hexane B - NaOH                    N - None C - Zn Acetate              O - AsNaO2 D - Nitric Acid              P - Na2O4S E - NaHSO4                 Q - Na2SO3 F - MeOH                    R - Na2S2O3 G - Amchlor                S - H2SO4 H - Ascorbic Acid          T - TSP Dodecahydrate I - Ice                         U - Acetone J - DI Water                 V - MCAA K - EDTA                    W - ph 4-5 L - EDA                      Z - other (specify)	
Address: 8425 Woodfield Crossing Blvd Suite 560-W		TAT Requested (days): <b>Standard</b>							
City: Indianapolis		PO #:		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Total Number of containers	
State, Zip: IN, 46240		Purchase Order not required							
Phone: 317-706-2000(Tel)		WO #:		Arsenic		Chromium		Lead	
Email: austin.taylor@erm.com		Project #:							
Project Name: Former Reid Hospital Site		SSOW#:		Lithium		PAHs		PCBs	
Site:									
<b>Sample Identification</b>		<b>Sample Date</b>		<b>Sample Time</b>		<b>Sample Type (C=comp, G=grab)</b>		<b>Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)</b>	
SB-23 (12-16')		6-14-16		1030		G		S	
SB-28 (0-2')		6-13-16		1715					
SB-26 (12-16')		6-14-16		1325					
SB-23 (1-2')		6-14-16		0935					
SB-26 (0-2')		6-14-16		1245					
SB-28 (17-20)		6-13-16		1800					
SB-22 (16-20)		6-14-16		1510					
Dup-AE		6-14-16		—					
SB-22 (0-2')		6-14-16		1450					
SB-28 (3-5')		6-13-16		1715					
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological					Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month ) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Deliverable Requested: I, II, III, IV, Other (specify) <b>II</b>					Special Instructions/QC Requirements:				
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:			
Relinquished by: Austin Taylor		Date/Time: 6-15-16/1900		Company: ERM		Received by: MCK		Date/Time: 06/16/16 0855	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:					



### Chain of Custody Record

<b>Client Information</b>	Sampler: <u>Austin Taylor / C Barrows</u>	Lab PM: Hoerchler, Elizabeth M	Carrier Tracking No(s):	COC No: 160-4224-2057.1
Client Contact: Austin Taylor	Phone:	E-Mail: elizabeth.hoerchler@testamericainc.com		Page: Page 1 of 1

Company: Environmental Resources Management Inc	Due Date Requested:	<b>Analysis Requested</b>			Job #:								
Address: 8425 Woodfield Crossing Blvd Suite 560-W	TAT Requested (days): <u>Standard</u>	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers	Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify)								
City: Indianapolis	PO #: Purchase Order not required												
State, Zip: IN, 46240	WO #:												
Phone: 317-706-2000(Tel)	Project #: 16005365												
Email: austin.taylor@erm.com	SSOW#:	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:5%;">Arsenic</td><td style="width:5%;">Chromium</td><td style="width:5%;">Lead</td><td style="width:5%;">Thallium</td><td style="width:5%;">Dioxins</td><td style="width:5%;">Radio nucleides</td><td style="width:5%;">Lithium</td><td style="width:5%;">PAHs</td><td style="width:5%;">PCBs</td> </tr> </table>			Arsenic	Chromium	Lead	Thallium	Dioxins	Radio nucleides	Lithium	PAHs	PCBs
Arsenic	Chromium	Lead	Thallium	Dioxins	Radio nucleides	Lithium	PAHs	PCBs					

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)	Arsenic	Chromium	Lead	Thallium	Dioxins	Radio nucleides	Lithium	PAHs	PCBs	Total Number of containers	Special Instructions/Note:
				Preservation Code:	X	X											
SB-35 (0-2')	6-15-16	1455	G	S						X	X	X					
SB-16 (0-2')	6-15-16	1545					X	X	X	X	X	X					
SB-16 (8-12')	6-15-16	1610					X	X	X	X	X	X					
SB-18 (0-2')	6-15-16	1105					X	X	X	X	X	X					
SB-17 (16-20')	6-15-16	1010									X	X					
SB-18 (16-20')	6-15-16	1140									X	X					
SB-17 (0-2')	6-15-16	1000					X	X	X	X	X	X					
Dup-B	6-15-16	—					X	X	X	X	X	X					
Dup-C	6-15-16	—					X	X	X	X	X	X					
SB-17 (6-8')	6-15-16	1155					X	X	X	X	X	X					
SB-18 (6-8')	6-15-16	1145					X	X	X	X	X	X					

<b>Possible Hazard Identification</b> <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological	<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b> <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) <u>II</u>	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:	
Relinquished by: <u>Austin Taylor</u>	Date/Time: <u>6-15-16/1900</u>	Company: <u>ERM</u>	Received by: <u>McIS</u>	Date/Time: <u>061616 0855</u>
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:		







Reid Hospital, Richmond, IN

Survey Number: \_\_\_/\_\_\_/\_\_\_

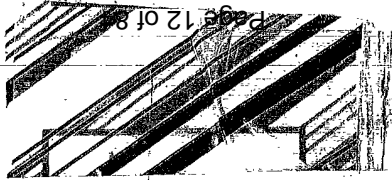
Sample coolers #1, #2, #3  
 Surveyed for shipment to lab -  
 No detectable activity found for  $\alpha$ ,  $\beta$   
 Smears 1-18 taken on coolers all  
 $\leq$  Bkgd, dose rates on coolers all  
 8-10  $\mu$ sr/HR using 26-1

Make	Model	Instruments: S/N	Cal. Due Date	BKG (cpm)
26-1 Ludlum	26-1	PF006227	11 Mar 17	8 $\mu$ sr/HR
14 Ludlum	2360/43-93	319914/PR354135	15 Dec 16	0/211
<del>N/A</del>	<del>N/A</del>	<del>N/A</del>	<del>N/A</del>	<del>N/A</del>

HPT Name/Sign: Charles Quinn / Cl 2 Date: 6-15-16

Reviewed By: Kevin Myers / [Signature] Date: 6-15-16





Part # 159469434 RTZ EXP 03/17



160-17824 Waybill

ORIGIN ID:ALNA (314) 298-8566  
BRIAN DANIELS  
TEST AMERICA  
13715 RIDER TRAIL NORTH

SHIP DATE: 20JUN16  
ACTWT: 36.2 LB  
CAD: 486221/CAFE2912

EARTH CITY, MO 63045  
UNITED STATES US

BILL RECIPIENT

TO SHIPPING/RECEIVING  
TESTAMERICA LABORATORIES, INC.  
301 ALPHA DRIVE

PITTSBURGH PA 15238

(412) 963-7066

REF: S160-4277



Uncorrected temp 5.3 °C  
Thermometer ID 0

CF 0 Initials AD

PT-WI-SR-001 effective 7/26/13

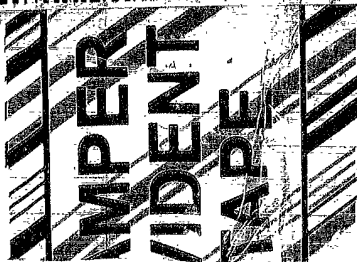
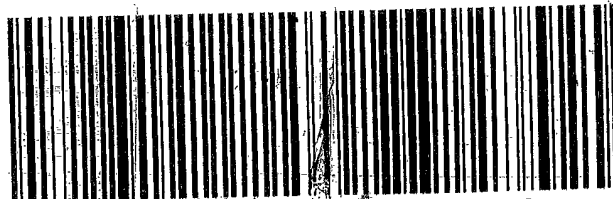


TRK# 5399 0213  
0201

TUE - 21 JUN 10:30A  
PRIORITY OVERNIGHT

NA AGCA

15238  
PA-US PIT



13  
12  
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1

**TestAmerica St. Louis**

13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

**Chain of Custody Record**



**TestAmerica**

LEADER IN ENVIRONMENTAL TESTING

160-17824 Chain of Custody

Job #: 160-17824-1

<b>Client Information (Sub Contract Lab)</b>	Sampler:	Lab PM:	160-17824 Chain of Custody
Client Contact:	Phone:	Hoerchler, Elizabeth M	Job #: 160-17824-1
Shipping/Receiving		E-Mail:	elizabeth.hoerchler@testamericainc.com
Company:	Project #:		Page 1 of 1
TestAmerica Laboratories, Inc.	16005365		Job #: 160-17824-1

Address:	Due Date Requested:	<b>Analysis Requested</b>	
301 Alpha Drive, RIDC Park,	7/11/2016		
City:	TAT Requested (days):		
Pittsburgh			
State, Zip:	PO #:		
PA, 15238			
Phone:	WO #:	<b>Preservation Codes:</b> A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify)	
412-963-7058(Tel) 412-963-2468(Fax)			
Email:			
Project Name:	Project #:	Field Filtered Sample (Yes or No) Performed MS/MS (Yes or No) 8082_LL/3641_LL Standard List	
Former Reid Hospital Site	16005365		
Site:	SSOW#:	Total Number of Containers	
		Other:	

Sample Identification - Client ID (Lab ID)	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)	Performed MS/MS (Yes or No)	8082_LL/3641_LL Standard List	Total Number of Containers	Special Instructions/Note:
SB-28 (0-2') (160-17824-13)	6/13/16	17:15 Central		Solid			X		
SB-28 (17-20') (160-17824-17)	6/13/16	18:00 Central		Solid			X		
SB-22 (16-20') (160-17824-18)	6/14/16	15:10 Central		Solid			X		
DUP-A (160-17824-19)	6/14/16	Central		Solid			X		
SB-22 (0-2') (160-17824-20)	6/14/16	14:50 Central		Solid			X		
SB-22 (0-2') (160-17824-20MS)	6/14/16	14:50 Central	MS	Solid			X		
SB-22 (0-2') (160-17824-20MSD)	6/14/16	14:50 Central	MSD	Solid			X		

<b>Possible Hazard Identification</b>	<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>
Level 1 radioactive	<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>Del Clark</i>	Date/Time: 6-20-16 1700	Company: TASTZ	Received by: <i>WRS</i>
Relinquished by:	Date/Time:	Company:	Received by:
Relinquished by:	Date/Time:	Company:	Received by:

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
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9/15/2016



Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b>	Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:
Client Contact:	Phone:	Hoerchler, Elizabeth M		160-87296.1
Shipping/Receiving:		E-Mail:		Page:
Company:		elizabeth.hoerchler@testamericainc.com		Page 1 of 1

Address: 880 Riverside Parkway, City: West Sacramento State, Zip: CA, 95605 Phone: 916-373-5600(Tel) 916-372-1059(Fax) Email:			Due Date Requested: 7/11/2016 TAT Requested (days):	Analysis Requested	Job #: 160-17824-1
Project Name: Former Reid Hospital Site Site:			Project #: 16005365 SSOW#:		Preservation Codes: A - HCL                    M - Hexane B - NaOH                  N - None C - Zn Acetate          O - AsNaO2 D - Nitric Acid          P - Na2O4S E - NaHSO4              Q - Na2SO3 F - MeOH                 R - Na2S2O3 G - Amchlor             S - H2SO4 H - Ascorbic Acid      T - TSP Dodecahydrate I - Ice                      U - Acetone J - DI Water             V - MCAA K - EDTA                 W - ph 4-5 L - EDA                    Z - other (specify)
PO #:			Other:		
WO #:					

Sample Identification - Client ID (Lab ID)	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)	8290A/8290_P_Sox 17 Isomers List	Total Number of containers	Special Instructions/Note:
SB-28 (3-5') (160-17824-21)	6/13/16	17:15 Central		Solid		X		1	
SB-35 (0-2') (160-17824-22)	6/15/16	14:55 Central		Solid		X		1	
DUP-C (160-17824-30)	6/15/16	Central		Solid		X		1	

<b>Possible Hazard Identification</b>	<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>
Level 1 radioactive	<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>Jill Clarke</i>	Date/Time: <i>6.20.16 1700</i>	Company: <i>TASTR</i>	Received by: <i>W.C. 1.5</i>
Relinquished by:	Date/Time:	Company:	Date/Time: <i>6/21/16 0930</i>
Relinquished by:	Date/Time:	Company:	Date/Time:

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: <i>2.9</i>
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**TestAmerica St. Louis**

13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

**Chain of Custody Record**



**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information (Sub Contract Lab)</b>		Sampler:		Lab PM:		Carrier Tracking No(s):		COC No:									
Client Contact: Shipping/Receiving		Phone:		Hoerchler, Elizabeth M				160-87296.1									
Company: TestAmerica Laboratories, Inc.				E-Mail: elizabeth.hoerchler@testamericainc.com				Page: Page 1 of 1									
Address: 880 Riverside Parkway, City: West Sacramento State, Zip: CA, 95605 Phone: 916-373-5600(Tel) 916-372-1059(Fax) Email:		Due Date Requested: 7/11/2016 TAT Requested (days):		<b>Analysis Requested</b>						Job #: 160-17824-1							
Project Name: Former Reid Hospital Site Site:		Project #: 16005365 SSOW#:		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 8290A/8290_P_Sox 17 Isomers List Total Number of containers						<b>Preservation Codes:</b> A - HCL                      M - Hexane B - NaOH                    N - None C - Zn Acetate              O - AsNaO2 D - Nitric Acid              P - Na2O4S E - NaHSO4                  Q - Na2SO3 F - MeOH                    R - Na2S2O3 G - Amchlor                S - H2SO4 H - Ascorbic Acid          T - TSP Dodecahydrate I - Ice                        U - Acetone J - DI Water                V - MCAA K - EDTA                    W - ph 4-5 L - EDA                      Z - other (specify)		Other:					
Sample Identification - Client ID (Lab ID)		Sample Date								Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		Special Instructions/Note:	
												Preservation Code:					
SB-28 (3-5') (160-17824-21)		6/13/16								17:15 Central		Solid				1	
SB-35 (0-2') (160-17824-22)		6/15/16		14:55 Central		Solid				1							
DUP-C (160-17824-30)		6/15/16		Central		Solid				1							
<b>Possible Hazard Identification</b>						<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>											
Level 1 radioactive						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>Jill Clarke</i>			Date/Time: 6.20.16 1700		Company: TASTC		Received by: <i>W. I. S.</i>		Date/Time: 6/21/16 0930		Company: TAW5						
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: 2.9											

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# Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 160-17824-1

**Login Number: 17824**

**List Source: TestAmerica St. Louis**

**List Number: 1**

**Creator: McKinney, Gerrod E**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
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 (excluding tests with immediate HTs)	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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 160-17824-1

**Login Number: 17824**  
**List Number: 2**  
**Creator: Davis, Ellen G**

**List Source: TestAmerica Pittsburgh**  
**List Creation: 06/21/16 11:40 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 160-17824-1

**Login Number: 17824**  
**List Number: 3**  
**Creator: Shockley, Wesley S**

**List Source: TestAmerica Sacramento**  
**List Creation: 06/22/16 01:43 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Definitions/Glossary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Qualifiers

### GC/MS VOA

Qualifier	Qualifier Description
*	ISTD response or retention time outside acceptable limits
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
F2	MS/MSD RPD exceeds control limits
F1	MS and/or MSD Recovery is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
X	Surrogate is outside control limits
*	ISTD response or retention time outside acceptable limits

### GC Semi VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*	ISTD response or retention time outside acceptable limits
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits

### Dioxin

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
E	Result exceeded calibration range.

### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

### Rad TICs

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid

TestAmerica St. Louis



## Definitions/Glossary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

### Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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)

# Method Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SL
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL SL
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SL
8082	Polychlorinated Biphenyls (PCBs) (GC)	SW846	TAL PIT
8290A	Dioxins and Furans (HRGC/HRMS)	SW846	TAL SAC
6020A	Metals (ICP/MS)	SW846	TAL SL
D 2216	Percent Moisture	ASTM	TAL SAC
Moisture	Percent Moisture	EPA	TAL SL
901.1	Radium-226 & Other Gamma Emitters (GS)	EPA	TAL SL
9310	Gross Alpha / Beta (GFPC)	SW846	TAL SL

#### Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

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

#### Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Sample Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-17824-1	SB-30 (1-3') 20160614-01	Solid	06/14/16 15:35	06/16/16 08:55
160-17824-2	SB-19 (6-8') 20160615-01	Solid	06/15/16 12:10	06/16/16 08:55
160-17824-3	SB-19 (0-2') 20160615-01	Solid	06/15/16 09:15	06/16/16 08:55
160-17824-4	SB-24 (0-2') 20160615-01	Solid	06/14/16 16:10	06/16/16 08:55
160-17824-5	SB-24 (12-16') 20160614-01	Solid	06/14/16 16:35	06/16/16 08:55
160-17824-6	SB-25 (12-16') 20160614-01	Solid	06/14/16 18:45	06/16/16 08:55
160-17824-7	SB-27 (18-22') 20160614-01	Solid	06/14/16 17:45	06/16/16 08:55
160-17824-8	SB-27 (0-2') 20160614-01	Solid	06/14/16 17:20	06/16/16 08:55
160-17824-9	SB-25 (0-2') 20160614-01	Solid	06/14/16 18:40	06/16/16 08:55
160-17824-10	SB-19 (8-12') 20160615-01	Solid	06/15/16 09:30	06/16/16 08:55
160-17824-11	VOC TRIP BLANK 20160615-01	Water	06/15/16 00:00	06/16/16 08:55
160-17824-12	SB-23 (12-16') 20160614-01	Solid	06/14/16 10:30	06/16/16 08:55
160-17824-13	SB-28 (0-2') 20160613-01	Solid	06/13/16 17:15	06/16/16 08:55
160-17824-14	SB-26 (12-16') 20160613-01	Solid	06/14/16 13:25	06/16/16 08:55
160-17824-15	SB-23 (1-2') 20160614-01	Solid	06/14/16 09:35	06/16/16 08:55
160-17824-16	SB-26 (0-2') 20160614-01	Solid	06/14/16 12:45	06/16/16 08:55
160-17824-17	SB-28 (17-20') 20160614-01	Solid	06/13/16 18:00	06/16/16 08:55
160-17824-18	SB-22 (16-20') 20160614-01	Solid	06/14/16 15:10	06/16/16 08:55
160-17824-19	DUP-A 20160614-01	Solid	06/14/16 00:00	06/16/16 08:55
160-17824-20	SB-22 (0-2') 20160614-01	Solid	06/14/16 14:50	06/16/16 08:55
160-17824-21	SB-28 (3-5') 20160613-01	Solid	06/13/16 17:15	06/16/16 08:55
160-17824-22	SB-35 (0-2') 20160615-01	Solid	06/15/16 14:55	06/16/16 08:55
160-17824-23	SB-16 (0-2') 20160615-01	Solid	06/15/16 15:45	06/16/16 08:55
160-17824-24	SB-16 (8-12') 20160615-01	Solid	06/15/16 16:10	06/16/16 08:55
160-17824-25	SB-18 (0-2') 20160615-01	Solid	06/15/16 11:05	06/16/16 08:55
160-17824-26	SB-17 (16-20') 20160615-01	Solid	06/15/16 10:10	06/16/16 08:55
160-17824-27	SB-18 (16-20') 20160615-01	Solid	06/15/16 11:40	06/16/16 08:55
160-17824-28	SB-17 (0-2') 20160615-01	Solid	06/15/16 10:00	06/16/16 08:55
160-17824-29	DUP-B 20160615-01	Solid	06/15/16 00:00	06/16/16 08:55
160-17824-30	DUP-C 20160615-01	Solid	06/15/16 00:00	06/16/16 08:55
160-17824-31	SB-17 (6-8') 20160615-01	Solid	06/15/16 11:55	06/16/16 08:55
160-17824-32	SB-18 (6-8') 20160615-01	Solid	06/15/16 11:45	06/16/16 08:55

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-30 (1-3') 20160614-01**

**Lab Sample ID: 160-17824-1**

**Date Collected: 06/14/16 15:35**

**Matrix: Solid**

**Date Received: 06/16/16 08:55**

**Percent Solids: 85.2**

**Method: 8260C - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		6.7	0.57	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,1,2,2-Tetrachloroethane	ND	*	6.7	0.53	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		6.7	2.2	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,1,2-Trichloroethane	ND		6.7	0.76	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,1-Dichloroethane	ND		6.7	0.52	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,1-Dichloroethene	ND		6.7	2.1	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,2,4-Trichlorobenzene	ND	*	6.7	0.57	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,2-Dibromo-3-Chloropropane	ND	*	13	1.9	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,2-Dichlorobenzene	ND	*	6.7	0.37	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,2-Dichloroethane	ND		6.7	1.2	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,2-Dichloropropane	ND		6.7	0.51	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,3-Dichlorobenzene	ND	*	6.7	0.37	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,4-Dichlorobenzene	ND	*	6.7	0.80	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
2-Butanone (MEK)	ND		27	2.6	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
2-Hexanone	ND		27	2.4	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
4-Methyl-2-pentanone (MIBK)	ND		27	0.97	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Acetone	ND		27	8.6	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Benzene	ND		6.7	0.33	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Bromoform	ND	*	6.7	0.49	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Bromomethane	ND		13	1.5	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Carbon disulfide	ND		6.7	0.92	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Carbon tetrachloride	ND		6.7	0.68	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Chlorobenzene	ND		6.7	0.51	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Dibromochloromethane	ND		6.7	0.55	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Chloroethane	ND		13	0.69	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Chloroform	ND		6.7	0.51	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Chloromethane	ND		13	0.87	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
cis-1,2-Dichloroethene	ND		6.7	0.80	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
cis-1,3-Dichloropropene	ND		6.7	0.80	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Cyclohexane	ND		13	0.48	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Bromodichloromethane	ND		6.7	0.33	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Dichlorodifluoromethane	ND		13	1.7	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Ethylbenzene	ND		6.7	0.40	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
1,2-Dibromoethane (EDB)	ND		6.7	0.93	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Isopropylbenzene	ND	*	6.7	0.35	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Methyl acetate	ND		33	1.8	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Methyl tert-butyl ether	ND		6.7	0.64	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Methylcyclohexane	ND		13	0.35	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Methylene Chloride	ND		6.7	2.1	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
m-Xylene & p-Xylene	ND		6.7	0.76	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
o-Xylene	ND		6.7	0.45	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Styrene	ND		6.7	0.47	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Tetrachloroethene	ND		6.7	0.43	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Toluene	ND		6.7	0.93	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
trans-1,2-Dichloroethene	ND		6.7	1.3	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
trans-1,3-Dichloropropene	ND		6.7	0.47	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Trichloroethene	ND		6.7	0.52	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Trichlorofluoromethane	ND		6.7	0.67	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Vinyl chloride	ND		6.7	0.57	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-30 (1-3') 20160614-01**

**Lab Sample ID: 160-17824-1**

Date Collected: 06/14/16 15:35

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 85.2

**Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		13	1.1	ug/Kg	☼	06/21/16 10:41	06/21/16 15:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	126		74 - 135				06/21/16 10:41	06/21/16 15:15	1
Dibromofluoromethane (Surr)	112		53 - 143				06/21/16 10:41	06/21/16 15:15	1
4-Bromofluorobenzene (Surr)	139	*	59 - 150				06/21/16 10:41	06/21/16 15:15	1
1,2-Dichloroethane-d4 (Surr)	101		67 - 132				06/21/16 10:41	06/21/16 15:15	1

**Client Sample ID: SB-19 (6-8') 20160615-01**

**Lab Sample ID: 160-17824-2**

Date Collected: 06/15/16 12:10

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 91.6

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
Acenaphthylene	ND		360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Anthracene</b>	<b>51</b>	<b>J</b>	360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Benzo[a]anthracene</b>	<b>230</b>	<b>J</b>	360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Benzo[a]pyrene</b>	<b>220</b>	<b>J</b>	360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Benzo[b]fluoranthene</b>	<b>310</b>	<b>J</b>	360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Benzo[g,h,i]perylene</b>	<b>160</b>	<b>J</b>	360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Benzo[k]fluoranthene</b>	<b>110</b>	<b>J</b>	360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Chrysene</b>	<b>250</b>	<b>J</b>	360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Dibenz(a,h)anthracene</b>	<b>38</b>	<b>J</b>	360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Fluoranthene</b>	<b>540</b>		360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
Fluorene	ND		360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Indeno[1,2,3-cd]pyrene</b>	<b>360</b>		360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
1-Methylnaphthalene	ND		360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
2-Methylnaphthalene	ND		360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
Naphthalene	ND		360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Phenanthrene</b>	<b>320</b>	<b>J</b>	360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
<b>Pyrene</b>	<b>500</b>		360	36	ug/Kg	☼	06/24/16 17:32	07/11/16 18:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	85		59 - 110				06/24/16 17:32	07/11/16 18:39	1
Nitrobenzene-d5 (Surr)	76		44 - 120				06/24/16 17:32	07/11/16 18:39	1
Terphenyl-d14 (Surr)	90		59 - 98				06/24/16 17:32	07/11/16 18:39	1

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>2.4</b>	<b>J B</b>	5.3	1.4	mg/Kg	☼	06/29/16 09:00	07/07/16 16:23	10
<b>Lead</b>	<b>9.8</b>		1.6	0.53	mg/Kg	☼	06/29/16 09:00	07/07/16 16:23	10
Thallium	ND		2.7	0.81	mg/Kg	☼	06/29/16 09:00	07/07/16 16:23	10
<b>Lithium</b>	<b>8.8</b>	<b>B</b>	5.3	1.6	mg/Kg	☼	06/29/16 09:00	07/07/16 16:23	10

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-19 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-3**

Date Collected: 06/15/16 09:15

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 94.1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Acenaphthylene</b>	<b>1900</b>		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Anthracene</b>	<b>1300</b>	J	1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Benzo[a]anthracene</b>	<b>8000</b>		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Benzo[a]pyrene</b>	<b>7100</b>		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Benzo[b]fluoranthene</b>	<b>10000</b>		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Benzo[g,h,i]perylene</b>	<b>5200</b>		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Benzo[k]fluoranthene</b>	<b>3300</b>		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Chrysene</b>	<b>7700</b>		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Dibenz(a,h)anthracene</b>	<b>1400</b>	J	1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Fluoranthene</b>	<b>12000</b>		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Fluorene</b>	<b>490</b>	J	1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Indeno[1,2,3-cd]pyrene</b>	<b>6600</b>		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
1-Methylnaphthalene	ND		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
2-Methylnaphthalene	ND		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
Naphthalene	ND		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Phenanthrene</b>	<b>4700</b>		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1
<b>Pyrene</b>	<b>12000</b>		1700	180	ug/Kg	☼	06/24/16 17:32	07/11/16 23:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	91		59 - 110	06/24/16 17:32	07/11/16 23:52	1
Nitrobenzene-d5 (Surr)	83		44 - 120	06/24/16 17:32	07/11/16 23:52	1
Terphenyl-d14 (Surr)	116	X	59 - 98	06/24/16 17:32	07/11/16 23:52	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>11</b>	B	5.0	1.3	mg/Kg	☼	06/29/16 09:00	07/07/16 16:41	10
<b>Lead</b>	<b>96</b>		1.5	0.50	mg/Kg	☼	06/29/16 09:00	07/07/16 16:41	10
Thallium	ND		2.5	0.76	mg/Kg	☼	06/29/16 09:00	07/07/16 16:41	10
<b>Lithium</b>	<b>6.1</b>	B	5.0	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 16:41	10

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>0.525</b>		0.116	0.128	1.00	0.0665	pCi/g	06/21/16 13:24	07/12/16 12:51	1
Radium-228	0.239	U	0.221	0.222		0.240	pCi/g	06/21/16 13:24	07/12/16 12:51	1
Americium-241	0.0347	U	0.0788	0.0789		0.107	pCi/g	06/21/16 13:24	07/12/16 12:51	1
Cesium-137	-0.0467	U	0.0392	0.0395		0.0938	pCi/g	06/21/16 13:24	07/12/16 12:51	1
Cobalt-60	0.0278	U	0.0227	0.0229		0.0341	pCi/g	06/21/16 13:24	07/12/16 12:51	1

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Bi-214	0.525		0.116	0.128		0.0665	pCi/g	06/21/16 13:24	07/12/16 12:51	1
K-40	4.08		0.905	0.996		0.479	pCi/g	06/21/16 13:24	07/12/16 12:51	1
Pb-212	0.230		0.0609	0.0678		0.0700	pCi/g	06/21/16 13:24	07/12/16 12:51	1
Pb-214	0.514		0.0928	0.107		0.0822	pCi/g	06/21/16 13:24	07/12/16 12:51	1
Th-234	1.37		0.555	0.573		0.664	pCi/g	06/21/16 13:24	07/12/16 12:51	1
Tl-208	0.157		0.0416	0.0447		0.0192	pCi/g	06/21/16 13:24	07/12/16 12:51	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-19 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-3**

Date Collected: 06/15/16 09:15

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 94.1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	14.9		5.12	5.39	10.0	5.59	pCi/g	07/11/16 14:19	07/11/16 19:06	1
Gross Beta	10.6		2.76	2.95	10.0	3.31	pCi/g	07/11/16 14:19	07/11/16 19:06	1

**Client Sample ID: SB-24 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-4**

Date Collected: 06/14/16 16:10

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.561		0.139	0.150	1.00	0.104	pCi/g	06/21/16 13:24	07/12/16 12:50	1
Radium-228	0.239	U	0.252	0.253		0.283	pCi/g	06/21/16 13:24	07/12/16 12:50	1
Cesium-137	-0.0606	U	0.0833	0.0835		0.137	pCi/g	06/21/16 13:24	07/12/16 12:50	1
Other Detected Radionuclides			Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Bi-214	0.561		0.139	0.150		0.104	pCi/g	06/21/16 13:24	07/12/16 12:50	1
K-40	5.43		1.14	1.27		0.551	pCi/g	06/21/16 13:24	07/12/16 12:50	1
Pb-212	0.233		0.0818	0.0872		0.108	pCi/g	06/21/16 13:24	07/12/16 12:50	1
Pb-214	0.776		0.139	0.161		0.0925	pCi/g	06/21/16 13:24	07/12/16 12:50	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	17.9		5.11	5.50	10.0	4.70	pCi/g	07/11/16 14:19	07/11/16 19:06	1
Gross Beta	14.7		2.76	3.13	10.0	2.83	pCi/g	07/11/16 14:19	07/11/16 19:06	1

**Client Sample ID: SB-24 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-4**

Date Collected: 06/14/16 16:10

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 94.1

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	7.1	B	4.9	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 16:46	10

**Client Sample ID: SB-24 (12-16') 20160614-01**

**Lab Sample ID: 160-17824-5**

Date Collected: 06/14/16 16:35

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.885		0.200	0.220	1.00	0.141	pCi/g	06/21/16 13:24	07/12/16 13:30	1
Radium-228	1.04		0.260	0.281		0.257	pCi/g	06/21/16 13:24	07/12/16 13:30	1
Cesium-137	-0.0351	U	0.123	0.123		0.170	pCi/g	06/21/16 13:24	07/12/16 13:30	1

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-24 (12-16') 20160614-01**

**Lab Sample ID: 160-17824-5**

Date Collected: 06/14/16 16:35

Matrix: Solid

Date Received: 06/16/16 08:55

Other Detected			Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radionuclides	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Ac-228	1.04		0.260	0.281		0.257	pCi/g	06/21/16 13:24	07/12/16 13:30	1
Bi-214	0.885		0.200	0.220		0.141	pCi/g	06/21/16 13:24	07/12/16 13:30	1
K-40	12.0		2.11	2.44		1.02	pCi/g	06/21/16 13:24	07/12/16 13:30	1
Pb-212	0.843		0.144	0.181		0.127	pCi/g	06/21/16 13:24	07/12/16 13:30	1
Pb-214	1.12		0.199	0.231		0.191	pCi/g	06/21/16 13:24	07/12/16 13:30	1
Tl-208	0.353		0.0953	0.102		0.0587	pCi/g	06/21/16 13:24	07/12/16 13:30	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	18.5		5.17	5.58	10.0	4.92	pCi/g	07/11/16 14:19	07/11/16 19:06	1
Gross Beta	17.7		2.87	3.37	10.0	2.87	pCi/g	07/11/16 14:19	07/11/16 19:06	1

**Client Sample ID: SB-24 (12-16') 20160614-01**

**Lab Sample ID: 160-17824-5**

Date Collected: 06/14/16 16:35

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 85.5

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	12	B	5.6	1.7	mg/Kg	☒	06/29/16 09:00	07/07/16 16:50	10

**Client Sample ID: SB-25 (12-16') 20160614-01**

**Lab Sample ID: 160-17824-6**

Date Collected: 06/14/16 18:45

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.03		0.199	0.226	1.00	0.110	pCi/g	06/21/16 13:24	07/12/16 13:31	1
Radium-228	0.632		0.406	0.411		0.420	pCi/g	06/21/16 13:24	07/12/16 13:31	1
Cesium-137	-0.0549	U	0.0505	0.0508		0.148	pCi/g	06/21/16 13:24	07/12/16 13:31	1

Other Detected			Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radionuclides	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Bi-214	1.03		0.199	0.226		0.110	pCi/g	06/21/16 13:24	07/12/16 13:31	1
K-40	11.8		2.00	2.34		1.08	pCi/g	06/21/16 13:24	07/12/16 13:31	1
Pb-212	0.840		0.132	0.171		0.126	pCi/g	06/21/16 13:24	07/12/16 13:31	1
Pb-214	0.878		0.151	0.177		0.105	pCi/g	06/21/16 13:24	07/12/16 13:31	1
Tl-208	0.398		0.0806	0.0906		0.0298	pCi/g	06/21/16 13:24	07/12/16 13:31	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	10.5		4.34	4.50	10.0	4.89	pCi/g	07/11/16 14:19	07/11/16 19:07	1
Gross Beta	19.4		3.25	3.79	10.0	3.15	pCi/g	07/11/16 14:19	07/11/16 19:07	1

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-25 (12-16') 20160614-01**

**Lab Sample ID: 160-17824-6**

Date Collected: 06/14/16 18:45

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 88.7

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	12	B	5.6	1.7	mg/Kg	☼	06/29/16 09:00	07/07/16 16:55	10

**Client Sample ID: SB-27 (18-22') 20160614-01**

**Lab Sample ID: 160-17824-7**

Date Collected: 06/14/16 17:45

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.900		0.170	0.194	1.00	0.0838	pCi/g	06/21/16 13:24	07/12/16 13:32	1
Radium-228	0.317	U	0.282	0.284		0.375	pCi/g	06/21/16 13:24	07/12/16 13:32	1
Cesium-137	-0.0408	U	0.102	0.102		0.134	pCi/g	06/21/16 13:24	07/12/16 13:32	1
<b>Other Detected Radionuclides</b>										
Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Bi-214	0.900		0.170	0.194		0.0838	pCi/g	06/21/16 13:24	07/12/16 13:32	1
K-40	10.1		1.67	1.96		0.643	pCi/g	06/21/16 13:24	07/12/16 13:32	1
Pb-212	0.676		0.117	0.146		0.109	pCi/g	06/21/16 13:24	07/12/16 13:32	1
Pb-214	0.988		0.136	0.170		0.106	pCi/g	06/21/16 13:24	07/12/16 13:32	1
Tl-208	0.228		0.0748	0.0785		0.0654	pCi/g	06/21/16 13:24	07/12/16 13:32	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	13.4		4.72	4.96	10.0	5.11	pCi/g	07/11/16 14:19	07/11/16 19:07	1
Gross Beta	17.5		3.10	3.56	10.0	3.24	pCi/g	07/11/16 14:19	07/11/16 19:07	1

**Client Sample ID: SB-27 (18-22') 20160614-01**

**Lab Sample ID: 160-17824-7**

Date Collected: 06/14/16 17:45

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 86.1

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	15	B	5.2	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 17:00	10

**Client Sample ID: SB-27 (0-2') 20160614-01**

**Lab Sample ID: 160-17824-8**

Date Collected: 06/14/16 17:20

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.538		0.158	0.167	1.00	0.142	pCi/g	06/21/16 13:24	07/12/16 14:09	1
Radium-228	0.434		0.151	0.157		0.275	pCi/g	06/21/16 13:24	07/12/16 14:09	1
Cesium-137	0.0182	U	0.0441	0.0441		0.0768	pCi/g	06/21/16 13:24	07/12/16 14:09	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-27 (0-2') 20160614-01**

**Lab Sample ID: 160-17824-8**

Date Collected: 06/14/16 17:20

Matrix: Solid

Date Received: 06/16/16 08:55

Other Detected		Count	Total								
Radionuclides		Result	Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
		(2σ+/-)	(2σ+/-)								
Bi-214		0.538		0.158	0.167		0.142	pCi/g	06/21/16 13:24	07/12/16 14:09	1
K-40		6.48		1.15	1.33		0.745	pCi/g	06/21/16 13:24	07/12/16 14:09	1
Pb-212		0.312		0.0873	0.0962		0.110	pCi/g	06/21/16 13:24	07/12/16 14:09	1
Pb-214		0.700		0.118	0.139		0.112	pCi/g	06/21/16 13:24	07/12/16 14:09	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	16.5		5.36	5.68	10.0	5.57	pCi/g	07/11/16 14:19	07/11/16 19:07	1
Gross Beta	15.1		3.04	3.39	10.0	3.29	pCi/g	07/11/16 14:19	07/11/16 19:07	1

**Client Sample ID: SB-27 (0-2') 20160614-01**

**Lab Sample ID: 160-17824-8**

Date Collected: 06/14/16 17:20

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 90.9

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	7.2	B	4.8	1.4	mg/Kg	☼	06/29/16 09:00	07/07/16 17:04	10

**Client Sample ID: SB-25 (0-2') 20160614-01**

**Lab Sample ID: 160-17824-9**

Date Collected: 06/14/16 18:40

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Other Detected		Count	Total								
Radionuclides		Result	Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
		(2σ+/-)	(2σ+/-)								
Radium-226		0.439		0.0931	0.104	1.00	0.0376	pCi/g	06/21/16 13:24	07/12/16 14:08	1
Radium-228		0.211		0.111	0.113		0.196	pCi/g	06/21/16 13:24	07/12/16 14:08	1
Cesium-137		-0.00357	U	0.0343	0.0343		0.0674	pCi/g	06/21/16 13:24	07/12/16 14:08	1
Other Detected		Count	Total								
Radionuclides		Result	Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
		(2σ+/-)	(2σ+/-)								
Bi-214		0.439		0.0931	0.104		0.0376	pCi/g	06/21/16 13:24	07/12/16 14:08	1
K-40		6.97		1.14	1.35		0.461	pCi/g	06/21/16 13:24	07/12/16 14:08	1
Pb-212		0.246		0.0629	0.0705		0.0735	pCi/g	06/21/16 13:24	07/12/16 14:08	1
Pb-214		0.446		0.0790	0.0915		0.0563	pCi/g	06/21/16 13:24	07/12/16 14:08	1
Tl-208		0.0888		0.0361	0.0372		0.0282	pCi/g	06/21/16 13:24	07/12/16 14:08	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	7.89		4.16	4.26	10.0	5.23	pCi/g	07/11/16 14:19	07/11/16 22:51	1
Gross Beta	11.5		2.40	2.66	10.0	2.63	pCi/g	07/11/16 14:19	07/11/16 22:51	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-25 (0-2') 20160614-01**

**Lab Sample ID: 160-17824-9**

Date Collected: 06/14/16 18:40

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 88.6

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	6.0	B	5.2	1.6	mg/Kg	☼	06/29/16 09:00	07/07/16 17:08	10

**Client Sample ID: SB-19 (8-12') 20160615-01**

**Lab Sample ID: 160-17824-10**

Date Collected: 06/15/16 09:30

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.621		0.149	0.162	1.00	0.0922	pCi/g	06/21/16 13:24	07/12/16 14:07	1
Radium-228	0.247	U	0.253	0.254		0.306	pCi/g	06/21/16 13:24	07/12/16 14:07	1
Cesium-137	0.000563	U	0.0698	0.0698		0.127	pCi/g	06/21/16 13:24	07/12/16 14:07	1
<b>Other Detected Radionuclides</b>										
Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Bi-214	0.621		0.149	0.162		0.0922	pCi/g	06/21/16 13:24	07/12/16 14:07	1
K-40	9.04		1.66	1.90		0.707	pCi/g	06/21/16 13:24	07/12/16 14:07	1
Pb-212	0.359		0.103	0.113		0.123	pCi/g	06/21/16 13:24	07/12/16 14:07	1
Pb-214	0.685		0.147	0.164		0.104	pCi/g	06/21/16 13:24	07/12/16 14:07	1
Tl-208	0.137		0.0651	0.0666		0.0674	pCi/g	06/21/16 13:24	07/12/16 14:07	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	16.4		4.68	5.04	10.0	4.27	pCi/g	07/11/16 14:19	07/11/16 22:51	1
Gross Beta	11.9		2.40	2.68	10.0	2.70	pCi/g	07/11/16 14:19	07/11/16 22:51	1

**Client Sample ID: SB-19 (8-12') 20160615-01**

**Lab Sample ID: 160-17824-10**

Date Collected: 06/15/16 09:30

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 86.8

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	6.5	B	5.2	1.6	mg/Kg	☼	06/29/16 09:00	07/07/16 17:13	10

**Client Sample ID: VOC TRIP BLANK 20160615-01**

**Lab Sample ID: 160-17824-11**

Date Collected: 06/15/16 00:00

Matrix: Water

Date Received: 06/16/16 08:55

**Method: 8260C - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	H	5.0	0.29	ug/L			06/28/16 20:41	1
1,1,1,2-Tetrachloroethane	ND	H	5.0	0.43	ug/L			06/28/16 20:41	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	H	5.0	0.25	ug/L			06/28/16 20:41	1
1,1,2-Trichloroethane	ND	H	5.0	0.57	ug/L			06/28/16 20:41	1
1,1-Dichloroethane	ND	H	5.0	0.39	ug/L			06/28/16 20:41	1
1,1-Dichloroethene	ND	H	5.0	0.37	ug/L			06/28/16 20:41	1
1,2,4-Trichlorobenzene	ND	H	5.0	0.55	ug/L			06/28/16 20:41	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: VOC TRIP BLANK 20160615-01**

**Lab Sample ID: 160-17824-11**

**Date Collected: 06/15/16 00:00**

**Matrix: Water**

**Date Received: 06/16/16 08:55**

**Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND	H	10	1.2	ug/L			06/28/16 20:41	1
1,2-Dichlorobenzene	ND	H	5.0	0.28	ug/L			06/28/16 20:41	1
1,2-Dichloroethane	ND	H	5.0	0.37	ug/L			06/28/16 20:41	1
1,2-Dichloropropane	ND	H	5.0	0.32	ug/L			06/28/16 20:41	1
1,3-Dichlorobenzene	ND	H	5.0	0.23	ug/L			06/28/16 20:41	1
1,4-Dichlorobenzene	ND	H	5.0	0.35	ug/L			06/28/16 20:41	1
2-Butanone (MEK)	ND	H	20	0.39	ug/L			06/28/16 20:41	1
2-Hexanone	ND	H	20	0.59	ug/L			06/28/16 20:41	1
4-Methyl-2-pentanone (MIBK)	ND	H	20	0.33	ug/L			06/28/16 20:41	1
Acetone	ND	H	20	6.7	ug/L			06/28/16 20:41	1
Benzene	ND	H	5.0	0.25	ug/L			06/28/16 20:41	1
Bromoform	ND	H	5.0	0.37	ug/L			06/28/16 20:41	1
Bromomethane	ND	H	10	0.40	ug/L			06/28/16 20:41	1
Carbon disulfide	ND	H	5.0	0.37	ug/L			06/28/16 20:41	1
Carbon tetrachloride	ND	H	5.0	0.36	ug/L			06/28/16 20:41	1
Chlorobenzene	ND	H	5.0	0.38	ug/L			06/28/16 20:41	1
Dibromochloromethane	ND	H	5.0	0.33	ug/L			06/28/16 20:41	1
Chloroethane	ND	H	10	0.38	ug/L			06/28/16 20:41	1
Chloroform	ND	H	5.0	0.15	ug/L			06/28/16 20:41	1
Chloromethane	ND	H	10	0.55	ug/L			06/28/16 20:41	1
cis-1,2-Dichloroethene	ND	H	5.0	0.16	ug/L			06/28/16 20:41	1
cis-1,3-Dichloropropene	ND	H	5.0	0.34	ug/L			06/28/16 20:41	1
Cyclohexane	ND	H	10	0.36	ug/L			06/28/16 20:41	1
Bromodichloromethane	ND	H	5.0	0.25	ug/L			06/28/16 20:41	1
Dichlorodifluoromethane	ND	H	10	0.45	ug/L			06/28/16 20:41	1
Ethylbenzene	ND	H	5.0	0.30	ug/L			06/28/16 20:41	1
1,2-Dibromoethane (EDB)	ND	H	5.0	0.44	ug/L			06/28/16 20:41	1
Isopropylbenzene	ND	H	5.0	0.26	ug/L			06/28/16 20:41	1
Methyl acetate	ND	H	25	2.3	ug/L			06/28/16 20:41	1
Methyl tert-butyl ether	ND	H	5.0	0.40	ug/L			06/28/16 20:41	1
Methylcyclohexane	ND	H	10	0.26	ug/L			06/28/16 20:41	1
Methylene Chloride	ND	H	5.0	1.7	ug/L			06/28/16 20:41	1
m-Xylene & p-Xylene	ND	H	5.0	0.57	ug/L			06/28/16 20:41	1
o-Xylene	ND	H	5.0	0.32	ug/L			06/28/16 20:41	1
Styrene	ND	H	5.0	0.35	ug/L			06/28/16 20:41	1
Tetrachloroethene	ND	H	5.0	0.28	ug/L			06/28/16 20:41	1
Toluene	ND	H	5.0	1.0	ug/L			06/28/16 20:41	1
trans-1,2-Dichloroethene	ND	H	5.0	0.18	ug/L			06/28/16 20:41	1
trans-1,3-Dichloropropene	ND	H	5.0	0.35	ug/L			06/28/16 20:41	1
Trichloroethene	ND	H	5.0	0.29	ug/L			06/28/16 20:41	1
Trichlorofluoromethane	ND	H	5.0	0.22	ug/L			06/28/16 20:41	1
Vinyl chloride	ND	H	5.0	0.43	ug/L			06/28/16 20:41	1
Xylenes, Total	ND	H	10	0.85	ug/L			06/28/16 20:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	108		80 - 129		06/28/16 20:41	1
Dibromofluoromethane (Surr)	102		80 - 121		06/28/16 20:41	1
4-Bromofluorobenzene (Surr)	105		71 - 139		06/28/16 20:41	1
1,2-Dichloroethane-d4 (Surr)	96		76 - 121		06/28/16 20:41	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-23 (12-16') 20160614-01**

**Lab Sample ID: 160-17824-12**

Date Collected: 06/14/16 10:30

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	1.02		0.231	0.255	1.00	0.181	pCi/g	06/21/16 13:24	07/12/16 14:14	1
Radium-228	0.543		0.332	0.336		0.336	pCi/g	06/21/16 13:24	07/12/16 14:14	1
Cesium-137	0.0243	U	0.0693	0.0693		0.120	pCi/g	06/21/16 13:24	07/12/16 14:14	1
<b>Other Detected</b>										
			Count	Total						
Radionuclides	Result	Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Bi-214	1.02		0.231	0.255		0.181	pCi/g	06/21/16 13:24	07/12/16 14:14	1
K-40	9.60		1.82	2.06		1.41	pCi/g	06/21/16 13:24	07/12/16 14:14	1
Pb-212	0.601		0.123	0.145		0.139	pCi/g	06/21/16 13:24	07/12/16 14:14	1
Pb-214	0.870		0.161	0.185		0.129	pCi/g	06/21/16 13:24	07/12/16 14:14	1
Tl-208	0.209		0.0796	0.0825		0.0754	pCi/g	06/21/16 13:24	07/12/16 14:14	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	19.1		5.10	5.54	10.0	4.63	pCi/g	07/11/16 14:19	07/11/16 22:51	1
Gross Beta	21.6		2.87	3.60	10.0	2.60	pCi/g	07/11/16 14:19	07/11/16 22:51	1

**Client Sample ID: SB-23 (12-16') 20160614-01**

**Lab Sample ID: 160-17824-12**

Date Collected: 06/14/16 10:30

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 80.3

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	12	B	5.3	1.6	mg/Kg	☼	06/29/16 09:00	07/07/16 17:18	10

**Client Sample ID: SB-28 (0-2') 20160613-01**

**Lab Sample ID: 160-17824-13**

Date Collected: 06/13/16 17:15

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 95.4

**Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		8.7	4.0	ug/Kg	☼	06/22/16 02:20	06/29/16 09:25	10
PCB-1221	ND		8.7	6.3	ug/Kg	☼	06/22/16 02:20	06/29/16 09:25	10
PCB-1232	ND		8.7	2.2	ug/Kg	☼	06/22/16 02:20	06/29/16 09:25	10
PCB-1242	ND		8.7	3.2	ug/Kg	☼	06/22/16 02:20	06/29/16 09:25	10
PCB-1248	ND		8.7	2.0	ug/Kg	☼	06/22/16 02:20	06/29/16 09:25	10
PCB-1254	7.2	J	8.7	3.2	ug/Kg	☼	06/22/16 02:20	06/29/16 09:25	10
PCB-1260	3.9	J	8.7	3.0	ug/Kg	☼	06/22/16 02:20	06/29/16 09:25	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	897	X	20 - 150				06/22/16 02:20	06/29/16 09:25	10

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.3	B	4.9	1.3	mg/Kg	☼	06/29/16 09:00	07/07/16 17:22	10
Lead	7.7		1.5	0.49	mg/Kg	☼	06/29/16 09:00	07/07/16 17:22	10

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-28 (0-2') 20160613-01**

**Lab Sample ID: 160-17824-13**

Date Collected: 06/13/16 17:15

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 95.4

**Method: 6020A - Metals (ICP/MS) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	ND		2.5	0.75	mg/Kg	☼	06/29/16 09:00	07/07/16 17:22	10
Lithium	8.5	B	4.9	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 17:22	10

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.455		0.114	0.123	1.00	0.102	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Radium-228	0.152	U	0.0483	0.0507		0.327	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Americium-241	0.0468	U	0.108	0.108		0.146	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Cesium-137	-0.0379	U	0.0685	0.0686		0.0822	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Cobalt-60	0.0554		0.0213	0.0220		0.0309	pCi/g	06/21/16 13:24	07/12/16 14:48	1
<b>Other Detected Radionuclides</b>										
Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Bi-214	0.455		0.114	0.123		0.102	pCi/g	06/21/16 13:24	07/12/16 14:48	1
K-40	4.74		0.962	1.08		0.690	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Pb-212	0.250		0.0667	0.0742		0.0732	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Pb-214	0.624		0.109	0.127		0.113	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Tl-208	0.101		0.0458	0.0470		0.0461	pCi/g	06/21/16 13:24	07/12/16 14:48	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	14.0		4.88	5.14	10.0	4.98	pCi/g	07/11/16 14:19	07/11/16 22:51	1
Gross Beta	11.5		3.06	3.26	10.0	3.71	pCi/g	07/11/16 14:19	07/11/16 22:51	1

**Client Sample ID: SB-26 (12-16') 20160613-01**

**Lab Sample ID: 160-17824-14**

Date Collected: 06/14/16 13:25

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.18		0.284	0.309	1.00	0.230	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Radium-228	0.630		0.267	0.275		0.340	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Cesium-137	-0.00298	U	0.0779	0.0779		0.145	pCi/g	06/21/16 13:24	07/12/16 14:48	1
<b>Other Detected Radionuclides</b>										
Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Bi-214	1.18		0.284	0.309		0.230	pCi/g	06/21/16 13:24	07/12/16 14:48	1
K-40	10.9		2.17	2.44		1.17	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Pb-212	0.690		0.146	0.171		0.146	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Pb-214	1.35		0.199	0.244		0.175	pCi/g	06/21/16 13:24	07/12/16 14:48	1
Tl-208	0.199		0.0917	0.0940		0.0707	pCi/g	06/21/16 13:24	07/12/16 14:48	1

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-26 (12-16') 20160613-01**

**Lab Sample ID: 160-17824-14**

Date Collected: 06/14/16 13:25

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	17.6		5.30	5.67	10.0	5.96	pCi/g	07/11/16 14:19	07/11/16 22:51	1
Gross Beta	16.9		2.49	3.01	10.0	2.36	pCi/g	07/11/16 14:19	07/11/16 22:51	1

**Client Sample ID: SB-26 (12-16') 20160613-01**

**Lab Sample ID: 160-17824-14**

Date Collected: 06/14/16 13:25

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 77.6

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	11	B	5.7	1.7	mg/Kg	☼	06/29/16 09:00	07/07/16 17:40	10

**Client Sample ID: SB-23 (1-2') 20160614-01**

**Lab Sample ID: 160-17824-15**

Date Collected: 06/14/16 09:35

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.273		0.0801	0.0850	1.00	0.0564	pCi/g	06/21/16 13:24	07/12/16 14:49	1
Radium-228	0.245		0.130	0.132		0.159	pCi/g	06/21/16 13:24	07/12/16 14:49	1
Cesium-137	0.0180	U	0.0401	0.0402		0.0694	pCi/g	06/21/16 13:24	07/12/16 14:49	1
Other Detected Radionuclides		Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Bi-214	0.273		0.0801	0.0850		0.0564	pCi/g	06/21/16 13:24	07/12/16 14:49	1
K-40	4.90		0.989	1.11		0.481	pCi/g	06/21/16 13:24	07/12/16 14:49	1
Pb-214	0.344		0.0936	0.100		0.0854	pCi/g	06/21/16 13:24	07/12/16 14:49	1
Tl-208	0.0821		0.0372	0.0382		0.0336	pCi/g	06/21/16 13:24	07/12/16 14:49	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	12.7		4.60	4.83	10.0	4.85	pCi/g	07/11/16 14:19	07/11/16 22:51	1
Gross Beta	7.21		2.39	2.50	10.0	3.02	pCi/g	07/11/16 14:19	07/11/16 22:51	1

**Client Sample ID: SB-23 (1-2') 20160614-01**

**Lab Sample ID: 160-17824-15**

Date Collected: 06/14/16 09:35

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 96.6

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	3.9	J B	4.9	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 17:45	10

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-26 (0-2') 20160614-01**

**Lab Sample ID: 160-17824-16**

Date Collected: 06/14/16 12:45

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Radium-226</b>	<b>0.728</b>		0.160	0.177	1.00	0.0871	pCi/g	06/21/16 13:24	07/12/16 14:50	1
Radium-228	0.0114	U	0.351	0.351		0.430	pCi/g	06/21/16 13:24	07/12/16 14:50	1
Cesium-137	0.00768	U	0.0838	0.0838		0.148	pCi/g	06/21/16 13:24	07/12/16 14:50	1
<b>Other Detected</b>										
			Count	Total						
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Radionuclides</b>	<b>Result</b>	<b>Qualifier</b>			<b>RL</b>	<b>MDC</b>	<b>Unit</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Bi-214	0.728		0.160	0.177		0.0871	pCi/g	06/21/16 13:24	07/12/16 14:50	1
K-40	9.65		1.66	1.94		0.668	pCi/g	06/21/16 13:24	07/12/16 14:50	1
Pb-214	0.671		0.126	0.144		0.114	pCi/g	06/21/16 13:24	07/12/16 14:50	1
Tl-208	0.169		0.0678	0.0701		0.0659	pCi/g	06/21/16 13:24	07/12/16 14:50	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Gross Alpha</b>	<b>17.7</b>		5.42	5.78	10.0	6.12	pCi/g	07/11/16 14:19	07/11/16 22:51	1
<b>Gross Beta</b>	<b>15.5</b>		2.52	2.95	10.0	2.60	pCi/g	07/11/16 14:19	07/11/16 22:51	1

**Client Sample ID: SB-26 (0-2') 20160614-01**

**Lab Sample ID: 160-17824-16**

Date Collected: 06/14/16 12:45

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 91.4

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Lithium</b>	<b>9.9</b>	<b>B</b>	4.8	1.4	mg/Kg	☼	06/29/16 09:00	07/07/16 17:50	10

**Client Sample ID: SB-28 (17-20') 20160614-01**

**Lab Sample ID: 160-17824-17**

Date Collected: 06/13/16 18:00

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Radium-226</b>	<b>0.923</b>		0.194	0.216	1.00	0.154	pCi/g	06/21/16 13:24	07/12/16 15:26	1
<b>Radium-228</b>	<b>0.694</b>		0.206	0.218		0.349	pCi/g	06/21/16 13:24	07/12/16 15:26	1
Americium-241	0.0187	U	0.189	0.189		0.257	pCi/g	06/21/16 13:24	07/12/16 15:26	1
Cesium-137	-0.0218	U	0.0695	0.0696		0.121	pCi/g	06/21/16 13:24	07/12/16 15:26	1
Cobalt-60	0.0168	U	0.0613	0.0613		0.0723	pCi/g	06/21/16 13:24	07/12/16 15:26	1
<b>Other Detected</b>										
			Count	Total						
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Radionuclides</b>	<b>Result</b>	<b>Qualifier</b>			<b>RL</b>	<b>MDC</b>	<b>Unit</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ac-228	0.694		0.206	0.218		0.349	pCi/g	06/21/16 13:24	07/12/16 15:26	1
Bi-214	0.923		0.194	0.216		0.154	pCi/g	06/21/16 13:24	07/12/16 15:26	1
K-40	14.8		1.81	2.36		0.856	pCi/g	06/21/16 13:24	07/12/16 15:26	1
Pb-212	0.841		0.132	0.171		0.135	pCi/g	06/21/16 13:24	07/12/16 15:26	1
Pb-214	0.838		0.173	0.194		0.162	pCi/g	06/21/16 13:24	07/12/16 15:26	1
Tl-208	0.317		0.0867	0.0928		0.0682	pCi/g	06/21/16 13:24	07/12/16 15:26	1

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 9310 - Gross Alpha / Beta (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	11.3		6.44	6.57	10.0	9.24	pCi/g	07/11/16 14:19	07/11/16 22:51	1
Gross Beta	22.3		4.28	4.83	10.0	4.60	pCi/g	07/11/16 14:19	07/11/16 22:51	1

## Client Sample ID: SB-28 (17-20') 20160614-01

Date Collected: 06/13/16 18:00

Date Received: 06/16/16 08:55

## Lab Sample ID: 160-17824-17

Matrix: Solid

Percent Solids: 91.3

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.90	0.41	ug/Kg	☼	06/22/16 02:20	06/29/16 09:44	1
PCB-1221	ND		0.90	0.65	ug/Kg	☼	06/22/16 02:20	06/29/16 09:44	1
PCB-1232	ND		0.90	0.23	ug/Kg	☼	06/22/16 02:20	06/29/16 09:44	1
PCB-1242	ND		0.90	0.33	ug/Kg	☼	06/22/16 02:20	06/29/16 09:44	1
PCB-1248	ND		0.90	0.21	ug/Kg	☼	06/22/16 02:20	06/29/16 09:44	1
PCB-1254	ND		0.90	0.33	ug/Kg	☼	06/22/16 02:20	06/29/16 09:44	1
PCB-1260	ND		0.90	0.31	ug/Kg	☼	06/22/16 02:20	06/29/16 09:44	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
DCB Decachlorobiphenyl (Surr)	57		20 - 150				06/22/16 02:20	06/29/16 09:44	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.4	B	5.3	1.4	mg/Kg	☼	06/29/16 09:00	07/07/16 17:54	10
Lead	13		1.6	0.53	mg/Kg	☼	06/29/16 09:00	07/07/16 17:54	10
Thallium	ND		2.6	0.80	mg/Kg	☼	06/29/16 09:00	07/07/16 17:54	10
Lithium	15	B	5.3	1.6	mg/Kg	☼	06/29/16 09:00	07/07/16 17:54	10

## Client Sample ID: SB-22 (16-20') 20160614-01

Date Collected: 06/14/16 15:10

Date Received: 06/16/16 08:55

## Lab Sample ID: 160-17824-18

Matrix: Solid

Percent Solids: 80.0

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.0082	0.0012	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
2-Methylnaphthalene	ND		0.0082	0.00041	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Acenaphthene	ND		0.0082	0.0014	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Acenaphthylene	ND		0.0082	0.00099	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Anthracene	ND		0.0082	0.00062	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Benzo[a]anthracene	0.0013	J	0.0082	0.00076	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Benzo[a]pyrene	ND		0.0082	0.00058	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Benzo[b]fluoranthene	ND		0.0082	0.0011	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Benzo[g,h,i]perylene	0.0012	J	0.0082	0.00079	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Benzo[k]fluoranthene	ND		0.0082	0.0014	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Chrysene	0.00080	J	0.0082	0.00079	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Dibenz(a,h)anthracene	ND		0.0082	0.0019	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Fluoranthene	0.0016	J	0.0082	0.00095	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Fluorene	ND		0.0082	0.0011	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Indeno[1,2,3-cd]pyrene	ND		0.0082	0.0012	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Naphthalene	ND		0.0082	0.0013	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Phenanthrene	0.0026	J B	0.0082	0.00077	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1
Pyrene	0.0011	J	0.0082	0.00069	mg/Kg	☼	06/24/16 17:32	07/14/16 16:55	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-22 (16-20') 20160614-01**

**Lab Sample ID: 160-17824-18**

**Date Collected: 06/14/16 15:10**

**Matrix: Solid**

**Date Received: 06/16/16 08:55**

**Percent Solids: 80.0**

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	73		33 - 128	06/24/16 17:32	07/14/16 16:55	1
Nitrobenzene-d5 (Surr)	71		43 - 113	06/24/16 17:32	07/14/16 16:55	1
Terphenyl-d14 (Surr)	84		28 - 125	06/24/16 17:32	07/14/16 16:55	1

### Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		1.0	0.47	ug/Kg	☼	06/22/16 02:20	06/29/16 10:02	1
PCB-1221	ND		1.0	0.75	ug/Kg	☼	06/22/16 02:20	06/29/16 10:02	1
PCB-1232	ND		1.0	0.26	ug/Kg	☼	06/22/16 02:20	06/29/16 10:02	1
PCB-1242	ND		1.0	0.38	ug/Kg	☼	06/22/16 02:20	06/29/16 10:02	1
PCB-1248	ND		1.0	0.24	ug/Kg	☼	06/22/16 02:20	06/29/16 10:02	1
PCB-1254	ND		1.0	0.38	ug/Kg	☼	06/22/16 02:20	06/29/16 10:02	1
PCB-1260	ND		1.0	0.36	ug/Kg	☼	06/22/16 02:20	06/29/16 10:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	52		20 - 150	06/22/16 02:20	06/29/16 10:02	1

### Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	10	B	6.2	1.6	mg/Kg	☼	06/29/16 09:00	07/07/16 17:59	10
Lead	9.4		1.9	0.62	mg/Kg	☼	06/29/16 09:00	07/07/16 17:59	10
Thallium	ND		3.1	0.94	mg/Kg	☼	06/29/16 09:00	07/07/16 17:59	10
Lithium	8.3	B	6.2	1.9	mg/Kg	☼	06/29/16 09:00	07/07/16 17:59	10

### Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count		RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Total						
Radium-226	1.22		0.256	0.286	1.00	0.177	pCi/g	06/21/16 13:24	07/12/16 15:27	1
Radium-228	0.763		0.267	0.279		0.371	pCi/g	06/21/16 13:24	07/12/16 15:27	1
Americium-241	-0.128	U	0.182	0.182		0.355	pCi/g	06/21/16 13:24	07/12/16 15:27	1
Cesium-137	-0.0310	U	0.126	0.126		0.232	pCi/g	06/21/16 13:24	07/12/16 15:27	1
Cobalt-60	0.0258	U	0.120	0.120		0.150	pCi/g	06/21/16 13:24	07/12/16 15:27	1

Other Detected Radionuclides	Result	Qualifier	Count		RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Total						
Ac-228	0.763		0.267	0.279		0.371	pCi/g	06/21/16 13:24	07/12/16 15:27	1
Bi-214	1.22		0.256	0.286		0.177	pCi/g	06/21/16 13:24	07/12/16 15:27	1
K-40	11.8		2.36	2.65		1.28	pCi/g	06/21/16 13:24	07/12/16 15:27	1
Pb-212	0.687		0.150	0.175		0.146	pCi/g	06/21/16 13:24	07/12/16 15:27	1
Pb-214	1.22		0.246	0.277		0.287	pCi/g	06/21/16 13:24	07/12/16 15:27	1
Tl-208	0.253		0.0901	0.0939		0.0664	pCi/g	06/21/16 13:24	07/12/16 15:27	1

### Method: 9310 - Gross Alpha / Beta (GFPC)

Analyte	Result	Qualifier	Count		RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Total						
Gross Alpha	15.9		5.46	5.76	10.0	6.36	pCi/g	07/11/16 14:19	07/11/16 22:51	1
Gross Beta	15.9		2.77	3.19	10.0	2.81	pCi/g	07/11/16 14:19	07/11/16 22:51	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: DUP-A 20160614-01**

**Lab Sample ID: 160-17824-19**

**Date Collected: 06/14/16 00:00**

**Matrix: Solid**

**Date Received: 06/16/16 08:55**

**Percent Solids: 87.3**

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Acenaphthylene</b>	<b>65</b>	<b>J</b>	380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Anthracene</b>	<b>41</b>	<b>J</b>	380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Benzo[a]anthracene</b>	<b>210</b>	<b>J</b>	380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Benzo[a]pyrene</b>	<b>200</b>	<b>J</b>	380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Benzo[b]fluoranthene</b>	<b>320</b>	<b>J</b>	380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Benzo[g,h,i]perylene</b>	<b>230</b>	<b>J</b>	380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Benzo[k]fluoranthene</b>	<b>100</b>	<b>J</b>	380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Chrysene</b>	<b>260</b>	<b>J</b>	380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Dibenz(a,h)anthracene</b>	<b>52</b>	<b>J</b>	380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Fluoranthene</b>	<b>330</b>	<b>J</b>	380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
Fluorene	ND		380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Indeno[1,2,3-cd]pyrene</b>	<b>440</b>		380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
1-Methylnaphthalene	ND		380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
2-Methylnaphthalene	ND		380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
Naphthalene	ND		380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Phenanthrene</b>	<b>170</b>	<b>J</b>	380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1
<b>Pyrene</b>	<b>410</b>		380	38	ug/Kg	☼	06/24/16 17:32	07/11/16 19:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	86		59 - 110	06/24/16 17:32	07/11/16 19:13	1
Nitrobenzene-d5 (Surr)	79		44 - 120	06/24/16 17:32	07/11/16 19:13	1
Terphenyl-d14 (Surr)	89		59 - 98	06/24/16 17:32	07/11/16 19:13	1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.95	0.44	ug/Kg	☼	06/22/16 02:20	06/29/16 10:21	1
PCB-1221	ND		0.95	0.69	ug/Kg	☼	06/22/16 02:20	06/29/16 10:21	1
PCB-1232	ND		0.95	0.24	ug/Kg	☼	06/22/16 02:20	06/29/16 10:21	1
PCB-1242	ND		0.95	0.35	ug/Kg	☼	06/22/16 02:20	06/29/16 10:21	1
PCB-1248	ND		0.95	0.22	ug/Kg	☼	06/22/16 02:20	06/29/16 10:21	1
<b>PCB-1254</b>	<b>18</b>		0.95	0.35	ug/Kg	☼	06/22/16 02:20	06/29/16 10:21	1
<b>PCB-1260</b>	<b>18</b>		0.95	0.33	ug/Kg	☼	06/22/16 02:20	06/29/16 10:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	91	p *	20 - 150	06/22/16 02:20	06/29/16 10:21	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>16</b>	<b>B</b>	4.9	1.3	mg/Kg	☼	06/29/16 09:00	07/07/16 18:04	10
<b>Lead</b>	<b>890</b>		1.5	0.49	mg/Kg	☼	06/29/16 09:00	07/07/16 18:04	10
Thallium	ND		2.4	0.74	mg/Kg	☼	06/29/16 09:00	07/07/16 18:04	10
<b>Lithium</b>	<b>9.2</b>	<b>B</b>	4.9	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 18:04	10

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Radium-226</b>	<b>1.09</b>		0.189	0.220	1.00	0.0951	pCi/g	06/21/16 13:24	07/12/16 15:25	1
<b>Radium-228</b>	<b>0.567</b>		0.252	0.259		0.344	pCi/g	06/21/16 13:24	07/12/16 15:25	1
Americium-241	0.0132	U	0.153	0.153		0.210	pCi/g	06/21/16 13:24	07/12/16 15:25	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: DUP-A 20160614-01**

**Lab Sample ID: 160-17824-19**

Date Collected: 06/14/16 00:00

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 87.3

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS) (Continued)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Cesium-137	0.0158	U	0.0664	0.0665		0.117	pCi/g	06/21/16 13:24	07/12/16 15:25	1
Cobalt-60	0.000	U	0.0132	0.0132		0.0488	pCi/g	06/21/16 13:24	07/12/16 15:25	1
<b>Other Detected Radionuclides</b>										
	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Bi-214	1.09		0.189	0.220		0.0951	pCi/g	06/21/16 13:24	07/12/16 15:25	1
K-40	7.32		1.94	2.08		1.57	pCi/g	06/21/16 13:24	07/12/16 15:25	1
Pb-212	0.570		0.109	0.132		0.114	pCi/g	06/21/16 13:24	07/12/16 15:25	1
Pb-214	1.17		0.176	0.214		0.172	pCi/g	06/21/16 13:24	07/12/16 15:25	1
Tl-208	0.250		0.0762	0.0805		0.0624	pCi/g	06/21/16 13:24	07/12/16 15:25	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	17.5		5.04	5.42	10.0	5.10	pCi/g	07/11/16 14:19	07/11/16 22:51	1
Gross Beta	17.6		2.62	3.16	10.0	2.53	pCi/g	07/11/16 14:19	07/11/16 22:51	1

**Client Sample ID: SB-22 (0-2') 20160614-01**

**Lab Sample ID: 160-17824-20**

Date Collected: 06/14/16 14:50

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 88.1

**Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	0.0085	F2	0.0075	0.0011	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
2-Methylnaphthalene	ND	F1 F2	0.0075	0.00038	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Acenaphthene	ND	F1 F2	0.0075	0.0013	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Acenaphthylene	0.18	F2	0.0075	0.00090	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Anthracene	0.035	F1 F2	0.0075	0.00057	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Benzo[a]anthracene	0.15	F1 F2	0.0075	0.00069	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Benzo[a]pyrene	0.17	F2	0.0075	0.00053	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Benzo[b]fluoranthene	0.22	F2	0.0075	0.00098	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Benzo[g,h,i]perylene	0.16		0.0075	0.00072	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Benzo[k]fluoranthene	0.12	F1 F2	0.0075	0.0013	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Chrysene	0.19	F2	0.0075	0.00072	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Dibenz(a,h)anthracene	0.032		0.0075	0.0017	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Fluoranthene	0.23	F2	0.0075	0.00086	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Fluorene	ND	F1 F2	0.0075	0.00098	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Indeno[1,2,3-cd]pyrene	0.17		0.0075	0.0011	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Naphthalene	0.019	F1 F2	0.0075	0.0011	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Phenanthrene	0.071	B F1	0.0075	0.00070	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
Pyrene	0.26	F2	0.0075	0.00062	mg/Kg	☼	06/24/16 17:32	07/14/16 19:46	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2-Fluorobiphenyl (Surr)	79		33 - 128				06/24/16 17:32	07/14/16 19:46	1
Nitrobenzene-d5 (Surr)	74		43 - 113				06/24/16 17:32	07/14/16 19:46	1
Terphenyl-d14 (Surr)	83		28 - 125				06/24/16 17:32	07/14/16 19:46	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-22 (0-2') 20160614-01**

**Lab Sample ID: 160-17824-20**

**Date Collected: 06/14/16 14:50**

**Matrix: Solid**

**Date Received: 06/16/16 08:55**

**Percent Solids: 88.1**

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND	F1	0.93	0.43	ug/Kg	☼	06/22/16 02:20	06/29/16 10:40	1
PCB-1221	ND		0.93	0.68	ug/Kg	☼	06/22/16 02:20	06/29/16 10:40	1
PCB-1232	ND		0.93	0.23	ug/Kg	☼	06/22/16 02:20	06/29/16 10:40	1
PCB-1242	ND		0.93	0.35	ug/Kg	☼	06/22/16 02:20	06/29/16 10:40	1
PCB-1248	ND		0.93	0.22	ug/Kg	☼	06/22/16 02:20	06/29/16 10:40	1
PCB-1254	ND		0.93	0.35	ug/Kg	☼	06/22/16 02:20	06/29/16 10:40	1
<b>PCB-1260</b>	<b>43</b>	<b>F2 F1</b>	0.93	0.32	ug/Kg	☼	06/22/16 02:20	06/29/16 10:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	326	X	20 - 150	06/22/16 02:20	06/29/16 10:40	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>9.5</b>	<b>B</b>	5.3	1.4	mg/Kg	☼	06/29/16 09:00	07/07/16 18:09	10
<b>Lead</b>	<b>140</b>	<b>F1 F2</b>	1.6	0.53	mg/Kg	☼	06/29/16 09:00	07/07/16 18:09	10
Thallium	ND		2.7	0.81	mg/Kg	☼	06/29/16 09:00	07/07/16 18:09	10
<b>Lithium</b>	<b>7.0</b>	<b>B</b>	5.3	1.6	mg/Kg	☼	06/29/16 09:00	07/07/16 18:09	10

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Radium-226</b>	<b>1.35</b>		0.252	0.289	1.00	0.149	pCi/g	06/21/16 13:24	07/12/16 15:24	1
<b>Radium-228</b>	<b>1.14</b>		0.483	0.497		0.458	pCi/g	06/21/16 13:24	07/12/16 15:24	1
Americium-241	0.00189	U	0.278	0.278		0.473	pCi/g	06/21/16 13:24	07/12/16 15:24	1
Cesium-137	0.0317	U	0.134	0.134		0.232	pCi/g	06/21/16 13:24	07/12/16 15:24	1
Cobalt-60	0.0158	U	0.0413	0.0413		0.0976	pCi/g	06/21/16 13:24	07/12/16 15:24	1

Other Detected Radionuclides	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Ac-228	1.14		0.483	0.497		0.458	pCi/g	06/21/16 13:24	07/12/16 15:24	1
Bi-214	1.35		0.252	0.289		0.149	pCi/g	06/21/16 13:24	07/12/16 15:24	1
K-40	15.9		2.46	2.95		0.890	pCi/g	06/21/16 13:24	07/12/16 15:24	1
Pb-212	0.805		0.160	0.191		0.169	pCi/g	06/21/16 13:24	07/12/16 15:24	1
Pb-214	1.33		0.197	0.241		0.177	pCi/g	06/21/16 13:24	07/12/16 15:24	1
Tl-208	0.301		0.100	0.105		0.0919	pCi/g	06/21/16 13:24	07/12/16 15:24	1

## Method: 9310 - Gross Alpha / Beta (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Gross Alpha</b>	<b>11.1</b>		5.14	5.29	10.0	6.86	pCi/g	07/11/16 14:19	07/11/16 22:52	1
<b>Gross Beta</b>	<b>18.2</b>		2.66	3.22	10.0	2.58	pCi/g	07/11/16 14:19	07/11/16 22:52	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-28 (3-5') 20160613-01**

**Lab Sample ID: 160-17824-21**

Date Collected: 06/13/16 17:15

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 90.5

**Method: 8290A - Dioxins and Furans (HRGC/HRMS)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.33	J	1.1	0.038	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
2,3,7,8-TCDF	0.048	J	1.1	0.028	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
1,2,3,7,8-PeCDD	ND		5.5	0.050	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
1,2,3,7,8-PeCDF	ND		5.5	0.033	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
2,3,4,7,8-PeCDF	ND		5.5	0.034	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
1,2,3,4,7,8-HxCDD	ND		5.5	0.041	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
1,2,3,6,7,8-HxCDD	0.15	J	5.5	0.038	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
1,2,3,7,8,9-HxCDD	0.098	J	5.5	0.032	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
1,2,3,4,7,8-HxCDF	ND		5.5	0.055	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
1,2,3,6,7,8-HxCDF	ND		5.5	0.049	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
1,2,3,7,8,9-HxCDF	ND		5.5	0.052	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
2,3,4,6,7,8-HxCDF	ND		5.5	0.053	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
1,2,3,4,6,7,8-HpCDD	1.4	J B *	5.5	0.055	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
1,2,3,4,6,7,8-HpCDF	0.51	J B	5.5	0.035	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
1,2,3,4,7,8,9-HpCDF	ND		5.5	0.042	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
OCDD	11	B *	11	0.057	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
OCDF	1.5	J B	11	0.035	pg/g	☼	07/05/16 11:48	07/14/16 12:10	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	87		40 - 135				07/05/16 11:48	07/14/16 12:10	1
13C-2,3,7,8-TCDF	98		40 - 135				07/05/16 11:48	07/14/16 12:10	1
13C-1,2,3,7,8-PeCDD	85		40 - 135				07/05/16 11:48	07/14/16 12:10	1
13C-1,2,3,7,8-PeCDF	96		40 - 135				07/05/16 11:48	07/14/16 12:10	1
13C-1,2,3,6,7,8-HxCDD	93		40 - 135				07/05/16 11:48	07/14/16 12:10	1
13C-1,2,3,4,7,8-HxCDF	95		40 - 135				07/05/16 11:48	07/14/16 12:10	1
13C-1,2,3,4,6,7,8-HpCDD	89		40 - 135				07/05/16 11:48	07/14/16 12:10	1
13C-1,2,3,4,6,7,8-HpCDF	96		40 - 135				07/05/16 11:48	07/14/16 12:10	1
13C-OCDD	82		40 - 135				07/05/16 11:48	07/14/16 12:10	1

**Client Sample ID: SB-35 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-22**

Date Collected: 06/15/16 14:55

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 94.6

**Method: 8290A - Dioxins and Furans (HRGC/HRMS)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.38	J q	1.1	0.048	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
2,3,7,8-TCDF	0.17	J q	1.1	0.037	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
1,2,3,7,8-PeCDD	0.14	J	5.3	0.065	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
1,2,3,7,8-PeCDF	ND		5.3	0.043	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
2,3,4,7,8-PeCDF	ND		5.3	0.044	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
1,2,3,4,7,8-HxCDD	0.084	J q	5.3	0.043	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
1,2,3,6,7,8-HxCDD	0.29	J	5.3	0.039	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
1,2,3,7,8,9-HxCDD	0.27	J q	5.3	0.034	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
1,2,3,4,7,8-HxCDF	ND		5.3	0.074	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
1,2,3,6,7,8-HxCDF	ND		5.3	0.067	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
1,2,3,7,8,9-HxCDF	ND		5.3	0.071	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
2,3,4,6,7,8-HxCDF	ND		5.3	0.072	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
1,2,3,4,6,7,8-HpCDD	6.1		5.3	0.13	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
1,2,3,4,6,7,8-HpCDF	1.3	J	5.3	0.047	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
1,2,3,4,7,8,9-HpCDF	ND		5.3	0.056	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1

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# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-35 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-22**

Date Collected: 06/15/16 14:55

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 94.6

**Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	72	B	11	0.12	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
OCDF	2.7	J	11	0.050	pg/g	☼	07/15/16 13:06	07/20/16 15:08	1
Isotope Dilution		%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD		72		40 - 135			07/15/16 13:06	07/20/16 15:08	1
13C-2,3,7,8-TCDF		76		40 - 135			07/15/16 13:06	07/20/16 15:08	1
13C-1,2,3,7,8-PeCDD		69		40 - 135			07/15/16 13:06	07/20/16 15:08	1
13C-1,2,3,7,8-PeCDF		74		40 - 135			07/15/16 13:06	07/20/16 15:08	1
13C-1,2,3,6,7,8-HxCDD		80		40 - 135			07/15/16 13:06	07/20/16 15:08	1
13C-1,2,3,4,7,8-HxCDF		72		40 - 135			07/15/16 13:06	07/20/16 15:08	1
13C-1,2,3,4,6,7,8-HpCDD		76		40 - 135			07/15/16 13:06	07/20/16 15:08	1
13C-1,2,3,4,6,7,8-HpCDF		80		40 - 135			07/15/16 13:06	07/20/16 15:08	1
13C-OCDD		75		40 - 135			07/15/16 13:06	07/20/16 15:08	1

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	ND		2.4	0.74	mg/Kg	☼	06/29/16 09:00	07/07/16 18:53	10
Lithium	6.8		4.9	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 18:53	10

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.830		0.163	0.184	1.00	0.119	pCi/g	06/21/16 13:24	07/12/16 15:28	1
Radium-228	0.693		0.267	0.276		0.232	pCi/g	06/21/16 13:24	07/12/16 15:28	1
Cesium-137	0.0278	U	0.0611	0.0612		0.105	pCi/g	06/21/16 13:24	07/12/16 15:28	1
Other Detected			Count	Total						
Radionuclides		Qualifier	Uncert.	Uncert.	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ac-228			0.267	0.276		0.232	pCi/g	06/21/16 13:24	07/12/16 15:28	1
Bi-214			0.163	0.184		0.119	pCi/g	06/21/16 13:24	07/12/16 15:28	1
K-40			1.60	2.00		0.667	pCi/g	06/21/16 13:24	07/12/16 15:28	1
Pb-212			0.108	0.122		0.133	pCi/g	06/21/16 13:24	07/12/16 15:28	1
Pb-214			0.151	0.175		0.116	pCi/g	06/21/16 13:24	07/12/16 15:28	1
Tl-208			0.0578	0.0622		0.0430	pCi/g	06/21/16 13:24	07/12/16 15:28	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	21.9		5.41	5.96	10.0	4.53	pCi/g	07/11/16 14:19	07/11/16 22:52	1
Gross Beta	16.9		2.45	2.97	10.0	2.18	pCi/g	07/11/16 14:19	07/11/16 22:52	1

**Client Sample ID: SB-16 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-23**

Date Collected: 06/15/16 15:45

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 94.0

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Acenaphthylene	ND		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-16 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-23**

Date Collected: 06/15/16 15:45

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 94.0

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Anthracene	ND		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Benzo[a]anthracene	2200		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Benzo[a]pyrene	3000		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Benzo[b]fluoranthene	4100		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Benzo[g,h,i]perylene	2600		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Benzo[k]fluoranthene	1400	J	1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Chrysene	2700		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Dibenz(a,h)anthracene	540	J	1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Fluoranthene	3200		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Fluorene	ND		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Indeno[1,2,3-cd]pyrene	3400		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
1-Methylnaphthalene	ND		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
2-Methylnaphthalene	ND		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Naphthalene	ND		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Phenanthrene	430	J	1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
Pyrene	3200		1800	180	ug/Kg	☼	06/24/16 17:32	07/12/16 00:26	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2-Fluorobiphenyl (Surr)	99		59 - 110				06/24/16 17:32	07/12/16 00:26	1
Nitrobenzene-d5 (Surr)	89		44 - 120				06/24/16 17:32	07/12/16 00:26	1
Terphenyl-d14 (Surr)	121	X	59 - 98				06/24/16 17:32	07/12/16 00:26	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.8		4.7	1.2	mg/Kg	☼	06/29/16 09:00	07/07/16 18:58	10
Chromium	12		4.7	2.1	mg/Kg	☼	06/29/16 09:00	07/07/16 18:58	10
Lead	29		1.4	0.47	mg/Kg	☼	06/29/16 09:00	07/07/16 18:58	10
Thallium	ND		2.3	0.71	mg/Kg	☼	06/29/16 09:00	07/07/16 18:58	10
Lithium	7.7		4.7	1.4	mg/Kg	☼	06/29/16 09:00	07/07/16 18:58	10

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count		RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Total Uncert. (2σ+/-)						
Radium-226	0.886		0.195	0.215	1.00	0.157	pCi/g	06/21/16 13:24	07/12/16 15:29	1
Radium-228	0.514		0.206	0.213		0.167	pCi/g	06/21/16 13:24	07/12/16 15:29	1
Americium-241	-0.0767	U	0.176	0.176		0.250	pCi/g	06/21/16 13:24	07/12/16 15:29	1
Cesium-137	0.00810	U	0.0721	0.0721		0.129	pCi/g	06/21/16 13:24	07/12/16 15:29	1
Cobalt-60	0.0348	U	0.0324	0.0326		0.0466	pCi/g	06/21/16 13:24	07/12/16 15:29	1
<b>Other Detected Radionuclides</b>			Count		RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Total Uncert. (2σ+/-)						
Ac-228	0.514		0.206	0.213		0.167	pCi/g	06/21/16 13:24	07/12/16 15:29	1
Bi-214	0.886		0.195	0.215		0.157	pCi/g	06/21/16 13:24	07/12/16 15:29	1
K-40	9.60		1.63	1.90		0.890	pCi/g	06/21/16 13:24	07/12/16 15:29	1
Pb-214	0.857		0.143	0.169		0.134	pCi/g	06/21/16 13:24	07/12/16 15:29	1
Tl-208	0.199		0.0661	0.0692		0.0603	pCi/g	06/21/16 13:24	07/12/16 15:29	1

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-16 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-23**

Date Collected: 06/15/16 15:45

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 94.0

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	24.5		7.48	7.99	10.0	7.66	pCi/g	07/11/16 14:19	07/11/16 22:52	1
Gross Beta	16.9		2.63	3.13	10.0	2.52	pCi/g	07/11/16 14:19	07/11/16 22:52	1

**Client Sample ID: SB-16 (8-12') 20160615-01**

**Lab Sample ID: 160-17824-24**

Date Collected: 06/15/16 16:10

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 90.5

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Acenaphthylene	ND		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Anthracene	ND		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Benzo[a]anthracene	290	J	360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Benzo[a]pyrene	430		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Benzo[b]fluoranthene	590		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Benzo[g,h,i]perylene	300	J	360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Benzo[k]fluoranthene	210	J	360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Chrysene	370		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Dibenz(a,h)anthracene	50	J	360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Fluoranthene	440		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Fluorene	ND		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Indeno[1,2,3-cd]pyrene	480		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
1-Methylnaphthalene	ND		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
2-Methylnaphthalene	ND		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Naphthalene	ND		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Phenanthrene	58	J	360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Pyrene	420		360	37	ug/Kg	☼	06/24/16 17:32	07/11/16 19:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	90		59 - 110				06/24/16 17:32	07/11/16 19:48	1
Nitrobenzene-d5 (Surr)	78		44 - 120				06/24/16 17:32	07/11/16 19:48	1
Terphenyl-d14 (Surr)	87		59 - 98				06/24/16 17:32	07/11/16 19:48	1

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	22		5.0	1.3	mg/Kg	☼	06/29/16 09:00	07/07/16 19:02	10
Chromium	11		5.0	2.3	mg/Kg	☼	06/29/16 09:00	07/07/16 19:02	10
Lead	9.8		1.5	0.50	mg/Kg	☼	06/29/16 09:00	07/07/16 19:02	10
Thallium	ND		2.5	0.77	mg/Kg	☼	06/29/16 09:00	07/07/16 19:02	10
Lithium	8.5		5.0	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 19:02	10

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.654		0.162	0.176	1.00	0.148	pCi/g	06/21/16 13:24	07/12/16 15:30	1
Radium-228	0.402		0.213	0.217		0.204	pCi/g	06/21/16 13:24	07/12/16 15:30	1
Americium-241	0.0480	U	0.176	0.176		0.295	pCi/g	06/21/16 13:24	07/12/16 15:30	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-16 (8-12') 20160615-01**

**Lab Sample ID: 160-17824-24**

Date Collected: 06/15/16 16:10

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 90.5

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS) (Continued)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Cesium-137	0.0165	U	0.0371	0.0371		0.0648	pCi/g	06/21/16 13:24	07/12/16 15:30	1
<b>Cobalt-60</b>	<b>0.0543</b>		0.0313	0.0318		0.0333	pCi/g	06/21/16 13:24	07/12/16 15:30	1
<b>Other Detected Radionuclides</b>										
	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Ac-228	0.402		0.213	0.217		0.204	pCi/g	06/21/16 13:24	07/12/16 15:30	1
Bi-214	0.654		0.162	0.176		0.148	pCi/g	06/21/16 13:24	07/12/16 15:30	1
K-40	12.6		1.58	2.03		0.853	pCi/g	06/21/16 13:24	07/12/16 15:30	1
Pb-212	0.425		0.100	0.114		0.123	pCi/g	06/21/16 13:24	07/12/16 15:30	1
Pb-214	0.987		0.159	0.189		0.135	pCi/g	06/21/16 13:24	07/12/16 15:30	1
Tl-208	0.199		0.0715	0.0744		0.0635	pCi/g	06/21/16 13:24	07/12/16 15:30	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	11.4		4.29	4.49	10.0	4.20	pCi/g	07/11/16 14:19	07/11/16 22:52	1
Gross Beta	12.7		2.66	2.95	10.0	2.88	pCi/g	07/11/16 14:19	07/11/16 22:52	1

**Client Sample ID: SB-18 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-25**

Date Collected: 06/15/16 11:05

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 87.4

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	18000		1900	190	ug/Kg	☼	06/24/16 17:32	07/12/16 01:00	1
Acenaphthylene	ND		1900	190	ug/Kg	☼	06/24/16 17:32	07/12/16 01:00	1
Anthracene	39000		19000	1900	ug/Kg	☼	06/24/16 17:32	07/12/16 13:26	10
Benzo[a]anthracene	82000		19000	1900	ug/Kg	☼	06/24/16 17:32	07/12/16 13:26	10
Benzo[a]pyrene	69000		19000	1900	ug/Kg	☼	06/24/16 17:32	07/12/16 13:26	10
Benzo[b]fluoranthene	89000		19000	1900	ug/Kg	☼	06/24/16 17:32	07/12/16 13:26	10
Benzo[g,h,i]perylene	50000		19000	1900	ug/Kg	☼	06/24/16 17:32	07/12/16 13:26	10
Benzo[k]fluoranthene	20000		1900	190	ug/Kg	☼	06/24/16 17:32	07/12/16 01:00	1
Chrysene	85000		19000	1900	ug/Kg	☼	06/24/16 17:32	07/12/16 13:26	10
Dibenz(a,h)anthracene	9000		1900	190	ug/Kg	☼	06/24/16 17:32	07/12/16 01:00	1
Fluoranthene	200000		19000	1900	ug/Kg	☼	06/24/16 17:32	07/12/16 13:26	10
Fluorene	16000		1900	190	ug/Kg	☼	06/24/16 17:32	07/12/16 01:00	1
Indeno[1,2,3-cd]pyrene	61000		19000	1900	ug/Kg	☼	06/24/16 17:32	07/12/16 13:26	10
1-Methylnaphthalene	1900		1900	190	ug/Kg	☼	06/24/16 17:32	07/12/16 01:00	1
2-Methylnaphthalene	2200		1900	190	ug/Kg	☼	06/24/16 17:32	07/12/16 01:00	1
Naphthalene	1300	J	1900	190	ug/Kg	☼	06/24/16 17:32	07/12/16 01:00	1
Phenanthrene	150000		19000	1900	ug/Kg	☼	06/24/16 17:32	07/12/16 13:26	10
Pyrene	200000		19000	1900	ug/Kg	☼	06/24/16 17:32	07/12/16 13:26	10
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2-Fluorobiphenyl (Surr)	100		59 - 110				06/24/16 17:32	07/12/16 01:00	1
Nitrobenzene-d5 (Surr)	81		44 - 120				06/24/16 17:32	07/12/16 01:00	1
Terphenyl-d14 (Surr)	219	X *	59 - 98				06/24/16 17:32	07/12/16 01:00	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.3		5.2	1.4	mg/Kg	✳	06/29/16 09:00	07/07/16 19:07	10
Lead	30		1.6	0.52	mg/Kg	✳	06/29/16 09:00	07/07/16 19:07	10
Thallium	ND		2.6	0.79	mg/Kg	✳	06/29/16 09:00	07/07/16 19:07	10
Lithium	9.6		5.2	1.6	mg/Kg	✳	06/29/16 09:00	07/07/16 19:07	10

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.868		0.165	0.188	1.00	0.119	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Radium-228	0.606		0.214	0.223		0.242	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Americium-241	0.0113	U	0.140	0.140		0.203	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Cesium-137	0.0220	U	0.0593	0.0594		0.103	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Cobalt-60	-0.0531	U	0.122	0.122		0.121	pCi/g	06/21/16 13:29	07/12/16 12:56	1

### Other Detected

Radionuclides	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Ac-228	0.606		0.214	0.223		0.242	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Bi-214	0.868		0.165	0.188		0.119	pCi/g	06/21/16 13:29	07/12/16 12:56	1
K-40	8.43		1.44	1.68		0.787	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Pb-212	0.360		0.106	0.116		0.141	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Pb-214	0.977		0.158	0.188		0.129	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Tl-208	0.168		0.0558	0.0585		0.0515	pCi/g	06/21/16 13:29	07/12/16 12:56	1

## Method: 9310 - Gross Alpha / Beta (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	18.3		5.47	5.86	10.0	5.25	pCi/g	07/12/16 09:21	07/12/16 19:47	1
Gross Beta	15.9		2.76	3.18	10.0	2.70	pCi/g	07/12/16 09:21	07/12/16 19:47	1

Client Sample ID: SB-17 (16-20') 20160615-01

Lab Sample ID: 160-17824-26

Date Collected: 06/15/16 10:10

Matrix: Solid

Date Received: 06/16/16 08:55

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.908		0.174	0.198	1.00	0.118	pCi/g	06/21/16 13:29	07/12/16 13:35	1
Radium-228	0.780		0.212	0.227		0.269	pCi/g	06/21/16 13:29	07/12/16 13:35	1
Cesium-137	0.0206	U	0.0759	0.0759		0.132	pCi/g	06/21/16 13:29	07/12/16 13:35	1

### Other Detected

Radionuclides	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Ac-228	0.780		0.212	0.227		0.269	pCi/g	06/21/16 13:29	07/12/16 13:35	1
Bi-212	1.45		0.637	0.655		0.541	pCi/g	06/21/16 13:29	07/12/16 13:35	1
Bi-214	0.908		0.174	0.198		0.118	pCi/g	06/21/16 13:29	07/12/16 13:35	1
K-40	12.4		1.82	2.21		0.874	pCi/g	06/21/16 13:29	07/12/16 13:35	1
Pb-212	0.664		0.124	0.151		0.133	pCi/g	06/21/16 13:29	07/12/16 13:35	1
Pb-214	0.815		0.182	0.200		0.160	pCi/g	06/21/16 13:29	07/12/16 13:35	1
Tl-208	0.228		0.0794	0.0829		0.0753	pCi/g	06/21/16 13:29	07/12/16 13:35	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-17 (16-20') 20160615-01**

**Lab Sample ID: 160-17824-26**

Date Collected: 06/15/16 10:10

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	17.0		5.93	6.24	10.0	6.05	pCi/g	07/12/16 09:21	07/12/16 19:47	1
Gross Beta	19.0		4.02	4.45	10.0	4.32	pCi/g	07/12/16 09:21	07/12/16 19:47	1

**Client Sample ID: SB-17 (16-20') 20160615-01**

**Lab Sample ID: 160-17824-26**

Date Collected: 06/15/16 10:10

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 88.0

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	9.3		5.2	1.6	mg/Kg	☼	06/29/16 09:00	07/07/16 19:12	10

**Client Sample ID: SB-18 (16-20') 20160615-01**

**Lab Sample ID: 160-17824-27**

Date Collected: 06/15/16 11:40

Matrix: Solid

Date Received: 06/16/16 08:55

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.960		0.173	0.200	1.00	0.134	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Radium-228	0.310	U	0.282	0.284		0.366	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Cesium-137	-0.0203	U	0.0860	0.0861		0.148	pCi/g	06/21/16 13:29	07/12/16 12:56	1
<i>Other Detected</i>										
<i>Radionuclides</i>	<i>Result</i>	<i>Qualifier</i>	<i>Count</i>	<i>Total</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
			<i>Uncert.</i>	<i>Uncert.</i>						
			(2σ+/-)	(2σ+/-)						
Bi-214	0.960		0.173	0.200		0.134	pCi/g	06/21/16 13:29	07/12/16 12:56	1
K-40	12.9		1.69	2.14		0.945	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Pb-212	0.807		0.124	0.162		0.121	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Pb-214	0.892		0.156	0.182		0.158	pCi/g	06/21/16 13:29	07/12/16 12:56	1
Tl-208	0.256		0.0785	0.0829		0.0755	pCi/g	06/21/16 13:29	07/12/16 12:56	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	14.9		5.22	5.49	10.0	6.03	pCi/g	07/12/16 09:21	07/12/16 19:47	1
Gross Beta	14.6		2.61	2.99	10.0	2.65	pCi/g	07/12/16 09:21	07/12/16 19:47	1

**Client Sample ID: SB-18 (16-20') 20160615-01**

**Lab Sample ID: 160-17824-27**

Date Collected: 06/15/16 11:40

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 90.5

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	14		5.1	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 19:17	10

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-17 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-28**

**Date Collected: 06/15/16 10:00**

**Matrix: Solid**

**Date Received: 06/16/16 08:55**

**Percent Solids: 88.3**

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Acenaphthylene</b>	<b>64</b>	<b>J F2 F1</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Anthracene</b>	<b>53</b>	<b>J F1</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Benzo[a]anthracene</b>	<b>310</b>	<b>J F2</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Benzo[a]pyrene</b>	<b>300</b>	<b>J F2</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Benzo[b]fluoranthene</b>	<b>470</b>	<b>F2</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Benzo[g,h,i]perylene</b>	<b>210</b>	<b>J F2</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Benzo[k]fluoranthene</b>	<b>160</b>	<b>J F2</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Chrysene</b>	<b>320</b>	<b>J F2</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Dibenz(a,h)anthracene</b>	<b>47</b>	<b>J</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Fluoranthene</b>	<b>580</b>	<b>F2</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
Fluorene	ND		370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Indeno[1,2,3-cd]pyrene</b>	<b>440</b>		370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
1-Methylnaphthalene	ND		370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
2-Methylnaphthalene	ND		370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
Naphthalene	ND		370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Phenanthrene</b>	<b>230</b>	<b>J</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1
<b>Pyrene</b>	<b>490</b>	<b>F2</b>	370	37	ug/Kg	☼	06/24/16 17:32	07/11/16 22:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	81		59 - 110	06/24/16 17:32	07/11/16 22:05	1
Nitrobenzene-d5 (Surr)	74		44 - 120	06/24/16 17:32	07/11/16 22:05	1
Terphenyl-d14 (Surr)	82		59 - 98	06/24/16 17:32	07/11/16 22:05	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>8.6</b>		4.9	1.3	mg/Kg	☼	06/29/16 09:00	07/07/16 19:21	10
<b>Chromium</b>	<b>13</b>		4.9	2.2	mg/Kg	☼	06/29/16 09:00	07/07/16 19:21	10
<b>Lead</b>	<b>16</b>		1.5	0.49	mg/Kg	☼	06/29/16 09:00	07/07/16 19:21	10
Thallium	ND		2.4	0.74	mg/Kg	☼	06/29/16 09:00	07/07/16 19:21	10
<b>Lithium</b>	<b>8.7</b>		4.9	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 19:21	10

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>1.15</b>		0.234	0.263	1.00	0.186	pCi/g	06/21/16 13:29	07/12/16 18:51	1
<b>Radium-228</b>	<b>0.733</b>		0.313	0.322		0.463	pCi/g	06/21/16 13:29	07/12/16 18:51	1
Americium-241	-0.0246	U	0.215	0.215		0.294	pCi/g	06/21/16 13:29	07/12/16 18:51	1
Cesium-137	0.0427	U	0.0805	0.0806		0.137	pCi/g	06/21/16 13:29	07/12/16 18:51	1
Cobalt-60	-0.0558	U	0.0786	0.0788		0.159	pCi/g	06/21/16 13:29	07/12/16 18:51	1

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Bi-214	1.15		0.234	0.263		0.186	pCi/g	06/21/16 13:29	07/12/16 18:51	1
K-40	12.6		1.88	2.28		1.05	pCi/g	06/21/16 13:29	07/12/16 18:51	1
Pb-212	0.685		0.133	0.160		0.139	pCi/g	06/21/16 13:29	07/12/16 18:51	1
Pb-214	1.20		0.233	0.264		0.205	pCi/g	06/21/16 13:29	07/12/16 18:51	1
Tl-208	0.275		0.0884	0.0928		0.0831	pCi/g	06/21/16 13:29	07/12/16 18:51	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-17 (0-2') 20160615-01**

**Lab Sample ID: 160-17824-28**

Date Collected: 06/15/16 10:00

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 88.3

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
Gross Alpha	14.1		5.11	5.36	10.0	6.18	pCi/g	07/12/16 09:21	07/12/16 19:47	1
Gross Beta	19.5		2.75	3.37	10.0	2.51	pCi/g	07/12/16 09:21	07/12/16 19:47	1

**Client Sample ID: DUP-B 20160615-01**

**Lab Sample ID: 160-17824-29**

Date Collected: 06/15/16 00:00

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 90.7

**Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.0073	0.0011	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
2-Methylnaphthalene	ND		0.0073	0.00037	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Acenaphthene	ND		0.0073	0.0012	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Acenaphthylene	0.0032	J	0.0073	0.00088	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Anthracene	0.0011	J	0.0073	0.00055	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Benzo[a]anthracene	0.0088		0.0073	0.00068	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Benzo[a]pyrene	0.0079		0.0073	0.00052	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Benzo[b]fluoranthene	0.014		0.0073	0.00096	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Benzo[g,h,i]perylene	0.0077		0.0073	0.00070	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Benzo[k]fluoranthene	0.0052	J	0.0073	0.0012	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Chrysene	0.0089		0.0073	0.00070	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Dibenz(a,h)anthracene	ND		0.0073	0.0017	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Fluoranthene	0.015		0.0073	0.00084	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Fluorene	ND		0.0073	0.00096	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Indeno[1,2,3-cd]pyrene	0.0068	J	0.0073	0.0010	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Naphthalene	ND		0.0073	0.0011	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Phenanthrene	0.0056	J B	0.0073	0.00068	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Pyrene	0.013		0.0073	0.00061	mg/Kg	☼	06/24/16 17:32	07/14/16 17:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	67		33 - 128				06/24/16 17:32	07/14/16 17:29	1
Nitrobenzene-d5 (Surr)	72		43 - 113				06/24/16 17:32	07/14/16 17:29	1
Terphenyl-d14 (Surr)	81		28 - 125				06/24/16 17:32	07/14/16 17:29	1

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	11		5.0	1.3	mg/Kg	☼	06/29/16 09:00	07/07/16 19:53	10
Chromium	14		5.0	2.2	mg/Kg	☼	06/29/16 09:00	07/07/16 19:53	10
Lead	23		1.5	0.50	mg/Kg	☼	06/29/16 09:00	07/07/16 19:53	10
Thallium	ND		2.5	0.76	mg/Kg	☼	06/29/16 09:00	07/07/16 19:53	10
Lithium	9.6		5.0	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 19:53	10

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
Radium-226	1.05		0.242	0.266	1.00	0.213	pCi/g	06/21/16 13:29	07/12/16 14:15	1
Radium-228	0.843		0.252	0.266		0.146	pCi/g	06/21/16 13:29	07/12/16 14:15	1
Americium-241	-0.0159	U	0.208	0.208		0.301	pCi/g	06/21/16 13:29	07/12/16 14:15	1

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: DUP-B 20160615-01**

**Lab Sample ID: 160-17824-29**

Date Collected: 06/15/16 00:00

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 90.7

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS) (Continued)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Cesium-137	-0.00347	U	0.0892	0.0892		0.160	pCi/g	06/21/16 13:29	07/12/16 14:15	1
Cobalt-60	-0.0693	U	0.174	0.174		0.192	pCi/g	06/21/16 13:29	07/12/16 14:15	1
<b>Other Detected Radionuclides</b>										
			Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Ac-228	0.843		0.252	0.266		0.146	pCi/g	06/21/16 13:29	07/12/16 14:15	1
Bi-214	1.05		0.242	0.266		0.213	pCi/g	06/21/16 13:29	07/12/16 14:15	1
K-40	13.0		2.10	2.49		1.11	pCi/g	06/21/16 13:29	07/12/16 14:15	1
Pb-212	0.711		0.143	0.170		0.151	pCi/g	06/21/16 13:29	07/12/16 14:15	1
Pb-214	1.39		0.203	0.249		0.144	pCi/g	06/21/16 13:29	07/12/16 14:15	1
Tl-208	0.261		0.0909	0.0948		0.0859	pCi/g	06/21/16 13:29	07/12/16 14:15	1

**Method: 9310 - Gross Alpha / Beta (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	15.2		4.47	4.79	10.0	3.81	pCi/g	07/12/16 09:21	07/12/16 19:48	1
Gross Beta	15.1		2.49	2.91	10.0	2.44	pCi/g	07/12/16 09:21	07/12/16 19:48	1

**Client Sample ID: DUP-C 20160615-01**

**Lab Sample ID: 160-17824-30**

Date Collected: 06/15/16 00:00

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 90.3

**Method: 8290A - Dioxins and Furans (HRGC/HRMS)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.52	J	1.1	0.057	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
2,3,7,8-TCDF	0.55	J	1.1	0.046	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
1,2,3,7,8-PeCDD	0.25	J	5.5	0.065	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
1,2,3,7,8-PeCDF	0.14	J q	5.5	0.064	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
2,3,4,7,8-PeCDF	ND		5.5	0.067	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
1,2,3,4,7,8-HxCDD	0.26	J q	5.5	0.062	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
1,2,3,6,7,8-HxCDD	0.68	J	5.5	0.057	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
1,2,3,7,8,9-HxCDD	0.74	J	5.5	0.049	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
1,2,3,4,7,8-HxCDF	0.48	J	5.5	0.11	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
1,2,3,6,7,8-HxCDF	0.22	J	5.5	0.10	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
1,2,3,7,8,9-HxCDF	ND		5.5	0.11	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
2,3,4,6,7,8-HxCDF	0.24	J q	5.5	0.11	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
1,2,3,4,6,7,8-HpCDD	19		5.5	0.30	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
1,2,3,4,6,7,8-HpCDF	4.3	J	5.5	0.099	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
1,2,3,4,7,8,9-HpCDF	ND		5.5	0.12	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
OCDD	190	B	11	0.21	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
OCDF	8.8	J	11	0.052	pg/g	☼	07/15/16 13:06	07/20/16 15:53	1
<b>Isotope Dilution</b>									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	75		40 - 135				07/15/16 13:06	07/20/16 15:53	1
13C-2,3,7,8-TCDF	82		40 - 135				07/15/16 13:06	07/20/16 15:53	1
13C-1,2,3,7,8-PeCDD	74		40 - 135				07/15/16 13:06	07/20/16 15:53	1
13C-1,2,3,7,8-PeCDF	79		40 - 135				07/15/16 13:06	07/20/16 15:53	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: DUP-C 20160615-01**

**Lab Sample ID: 160-17824-30**

Date Collected: 06/15/16 00:00

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 90.3

**Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,6,7,8-HxCDD	87		40 - 135	07/15/16 13:06	07/20/16 15:53	1
13C-1,2,3,4,7,8-HxCDF	77		40 - 135	07/15/16 13:06	07/20/16 15:53	1
13C-1,2,3,4,6,7,8-HpCDD	79		40 - 135	07/15/16 13:06	07/20/16 15:53	1
13C-1,2,3,4,6,7,8-HpCDF	85		40 - 135	07/15/16 13:06	07/20/16 15:53	1
13C-OCDD	78		40 - 135	07/15/16 13:06	07/20/16 15:53	1

**Client Sample ID: SB-17 (6-8') 20160615-01**

**Lab Sample ID: 160-17824-31**

Date Collected: 06/15/16 11:55

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 88.4

**Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.0074	0.0011	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
2-Methylnaphthalene	ND		0.0074	0.00037	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Acenaphthene	ND		0.0074	0.0013	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Acenaphthylene	0.00096	J	0.0074	0.00089	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Anthracene	0.00067	J	0.0074	0.00056	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Benzo[a]anthracene	0.0028	J	0.0074	0.00069	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Benzo[a]pyrene	0.0024	J	0.0074	0.00053	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Benzo[b]fluoranthene	0.0039	J	0.0074	0.00097	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Benzo[g,h,i]perylene	0.0025	J	0.0074	0.00071	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Benzo[k]fluoranthene	0.0016	J	0.0074	0.0013	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Chrysene	0.0038	J	0.0074	0.00071	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Dibenz(a,h)anthracene	ND		0.0074	0.0017	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Fluoranthene	0.0065	J	0.0074	0.00086	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Fluorene	ND		0.0074	0.00098	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Indeno[1,2,3-cd]pyrene	0.0022	J	0.0074	0.0010	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Naphthalene	ND		0.0074	0.0011	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Phenanthrene	0.0044	J B	0.0074	0.00069	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Pyrene	0.0050	J	0.0074	0.00062	mg/Kg	☼	06/24/16 17:32	07/14/16 18:03	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
2-Fluorobiphenyl (Surr)	73		33 - 128	06/24/16 17:32	07/14/16 18:03	1			
Nitrobenzene-d5 (Surr)	68		43 - 113	06/24/16 17:32	07/14/16 18:03	1			
Terphenyl-d14 (Surr)	71		28 - 125	06/24/16 17:32	07/14/16 18:03	1			

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.0		5.2	1.3	mg/Kg	☼	06/29/16 09:00	07/07/16 19:57	10
Chromium	11		5.2	2.3	mg/Kg	☼	06/29/16 09:00	07/07/16 19:57	10
Lead	12		1.5	0.52	mg/Kg	☼	06/29/16 09:00	07/07/16 19:57	10
Thallium	ND		2.6	0.78	mg/Kg	☼	06/29/16 09:00	07/07/16 19:57	10
Lithium	7.1		5.2	1.5	mg/Kg	☼	06/29/16 09:00	07/07/16 19:57	10

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

**Client Sample ID: SB-18 (6-8') 20160615-01**

**Lab Sample ID: 160-17824-32**

Date Collected: 06/15/16 11:45

Matrix: Solid

Date Received: 06/16/16 08:55

Percent Solids: 89.0

**Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	0.0012	J	0.0074	0.0011	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
2-Methylnaphthalene	0.0013	J	0.0074	0.00037	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Acenaphthene	0.0084		0.0074	0.0013	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Acenaphthylene	0.0011	J	0.0074	0.00089	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Anthracene	0.020		0.0074	0.00056	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Benzo[a]anthracene	0.054		0.0074	0.00069	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Benzo[a]pyrene	0.046		0.0074	0.00053	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Benzo[b]fluoranthene	0.064		0.0074	0.00098	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Benzo[g,h,i]perylene	0.041		0.0074	0.00071	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Benzo[k]fluoranthene	0.023		0.0074	0.0013	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Chrysene	0.056		0.0074	0.00071	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Dibenz(a,h)anthracene	0.0061	J	0.0074	0.0017	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Fluoranthene	0.14		0.0074	0.00086	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Fluorene	0.0084		0.0074	0.00098	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Indeno[1,2,3-cd]pyrene	0.033		0.0074	0.0010	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Naphthalene	0.0013	J	0.0074	0.0011	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Phenanthrene	0.079	B	0.0074	0.00070	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1
Pyrene	0.10		0.0074	0.00062	mg/Kg	☼	06/24/16 17:32	07/14/16 18:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	74		33 - 128	06/24/16 17:32	07/14/16 18:38	1
Nitrobenzene-d5 (Surr)	75		43 - 113	06/24/16 17:32	07/14/16 18:38	1
Terphenyl-d14 (Surr)	77		28 - 125	06/24/16 17:32	07/14/16 18:38	1

**Method: 6020A - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.3	J	5.2	1.4	mg/Kg	☼	06/29/16 09:00	07/07/16 20:02	10
Lead	6.9		1.6	0.52	mg/Kg	☼	06/29/16 09:00	07/07/16 20:02	10
Thallium	ND		2.6	0.79	mg/Kg	☼	06/29/16 09:00	07/07/16 20:02	10
Lithium	5.1	J	5.2	1.6	mg/Kg	☼	06/29/16 09:00	07/07/16 20:02	10

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

**Lab Sample ID: MB 160-257296/1-A**

**Matrix: Solid**

**Analysis Batch: 257269**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 257296**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.43	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.40	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.7	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,1,2-Trichloroethane	ND		5.0	0.57	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,1-Dichloroethane	ND		5.0	0.39	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,1-Dichloroethene	ND		5.0	1.6	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,2,4-Trichlorobenzene	ND		5.0	0.43	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,2-Dibromo-3-Chloropropane	ND		10	1.5	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,2-Dichlorobenzene	ND		5.0	0.28	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,2-Dichloroethane	ND		5.0	0.87	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,2-Dichloropropane	ND		5.0	0.38	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,3-Dichlorobenzene	ND		5.0	0.28	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,4-Dichlorobenzene	ND		5.0	0.60	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
2-Butanone (MEK)	ND		20	1.9	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
2-Hexanone	ND		20	1.8	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
4-Methyl-2-pentanone (MIBK)	ND		20	0.73	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Acetone	ND		20	6.5	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Benzene	ND		5.0	0.25	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Bromoform	ND		5.0	0.37	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Bromomethane	ND		10	1.1	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Carbon disulfide	ND		5.0	0.69	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Carbon tetrachloride	ND		5.0	0.51	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Chlorobenzene	ND		5.0	0.38	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Dibromochloromethane	ND		5.0	0.41	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Chloroethane	ND		10	0.52	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Chloroform	ND		5.0	0.38	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Chloromethane	ND		10	0.65	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
cis-1,2-Dichloroethene	ND		5.0	0.60	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
cis-1,3-Dichloropropene	ND		5.0	0.60	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Cyclohexane	ND		10	0.36	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Bromodichloromethane	ND		5.0	0.25	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Dichlorodifluoromethane	ND		10	1.3	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Ethylbenzene	ND		5.0	0.30	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
1,2-Dibromoethane (EDB)	ND		5.0	0.70	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Isopropylbenzene	ND		5.0	0.26	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Methyl acetate	ND		25	1.4	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Methyl tert-butyl ether	ND		5.0	0.48	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Methylcyclohexane	ND		10	0.26	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Methylene Chloride	2.14	J	5.0	1.6	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
m-Xylene & p-Xylene	ND		5.0	0.57	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
o-Xylene	ND		5.0	0.34	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Styrene	ND		5.0	0.35	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Tetrachloroethene	ND		5.0	0.32	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Toluene	ND		5.0	0.70	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
trans-1,2-Dichloroethene	ND		5.0	0.94	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
trans-1,3-Dichloropropene	ND		5.0	0.35	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Trichloroethene	ND		5.0	0.39	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Trichlorofluoromethane	ND		5.0	0.50	ug/Kg		06/21/16 10:41	06/21/16 13:35	1

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: MB 160-257296/1-A**  
**Matrix: Solid**  
**Analysis Batch: 257269**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 257296**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		5.0	0.43	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Xylenes, Total	ND		10	0.85	ug/Kg		06/21/16 10:41	06/21/16 13:35	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	112		74 - 135				06/21/16 10:41	06/21/16 13:35	1
Dibromofluoromethane (Surr)	109		53 - 143				06/21/16 10:41	06/21/16 13:35	1
4-Bromofluorobenzene (Surr)	110		59 - 150				06/21/16 10:41	06/21/16 13:35	1
1,2-Dichloroethane-d4 (Surr)	92		67 - 132				06/21/16 10:41	06/21/16 13:35	1

**Lab Sample ID: LCS 160-257296/2-A**  
**Matrix: Solid**  
**Analysis Batch: 257269**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257296**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	54.7		ug/Kg		109	71 - 127
1,1,2,2-Tetrachloroethane	50.0	45.8		ug/Kg		92	52 - 140
1,1,2-Trichloroethane	50.0	48.7		ug/Kg		97	79 - 122
1,1-Dichloroethane	50.0	48.6		ug/Kg		97	80 - 120
1,1-Dichloroethene	50.0	59.0		ug/Kg		118	71 - 126
1,2,4-Trichlorobenzene	50.0	53.5		ug/Kg		107	80 - 128
1,2-Dibromo-3-Chloropropane	50.0	51.9		ug/Kg		104	69 - 130
1,2-Dichlorobenzene	50.0	49.9		ug/Kg		100	80 - 122
1,2-Dichloroethane	50.0	43.0		ug/Kg		86	68 - 128
1,2-Dichloropropane	50.0	46.5		ug/Kg		93	80 - 126
1,3-Dichlorobenzene	50.0	51.9		ug/Kg		104	80 - 122
1,4-Dichlorobenzene	50.0	51.9		ug/Kg		104	80 - 120
2-Butanone (MEK)	50.0	41.1		ug/Kg		82	41 - 140
2-Hexanone	50.0	37.9		ug/Kg		76	63 - 136
4-Methyl-2-pentanone (MIBK)	50.0	44.7		ug/Kg		89	67 - 130
Acetone	50.0	41.2		ug/Kg		82	39 - 140
Benzene	50.0	51.3		ug/Kg		103	80 - 120
Bromoform	50.0	53.7		ug/Kg		107	67 - 135
Bromomethane	50.0	44.0		ug/Kg		88	61 - 132
Carbon disulfide	50.0	58.5		ug/Kg		117	74 - 124
Carbon tetrachloride	50.0	57.2		ug/Kg		114	68 - 130
Chlorobenzene	50.0	53.8		ug/Kg		108	80 - 120
Dibromochloromethane	50.0	54.4		ug/Kg		109	77 - 126
Chloroethane	50.0	42.3		ug/Kg		85	73 - 129
Chloroform	50.0	50.5		ug/Kg		101	78 - 120
Chloromethane	50.0	45.6		ug/Kg		91	69 - 123
cis-1,2-Dichloroethene	50.0	52.6		ug/Kg		105	80 - 121
cis-1,3-Dichloropropene	50.0	48.7		ug/Kg		97	78 - 127
Cyclohexane	50.0	57.8		ug/Kg		116	77 - 130
Bromodichloromethane	50.0	48.7		ug/Kg		97	78 - 124
Dichlorodifluoromethane	50.0	51.9		ug/Kg		104	51 - 139
Ethylbenzene	50.0	51.8		ug/Kg		104	79 - 126
1,2-Dibromoethane (EDB)	50.0	49.7		ug/Kg		99	75 - 128
Isopropylbenzene	50.0	47.9		ug/Kg		96	77 - 140

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCS 160-257296/2-A**  
**Matrix: Solid**  
**Analysis Batch: 257269**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257296**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Methyl acetate	250	264		ug/Kg		105	78 - 129
Methyl tert-butyl ether	50.0	51.8		ug/Kg		104	75 - 126
Methylcyclohexane	50.0	50.3		ug/Kg		101	75 - 126
Methylene Chloride	50.0	53.1		ug/Kg		106	76 - 120
m-Xylene & p-Xylene	50.0	56.8		ug/Kg		114	79 - 133
o-Xylene	50.0	57.6		ug/Kg		115	76 - 133
Styrene	50.0	54.3		ug/Kg		109	80 - 129
Tetrachloroethene	50.0	58.1		ug/Kg		116	76 - 126
Toluene	50.0	51.4		ug/Kg		103	76 - 136
trans-1,2-Dichloroethene	50.0	55.9		ug/Kg		112	76 - 122
trans-1,3-Dichloropropene	50.0	49.2		ug/Kg		98	77 - 136
Trichloroethene	50.0	51.8		ug/Kg		104	66 - 130
Trichlorofluoromethane	50.0	46.9		ug/Kg		94	56 - 140
Vinyl chloride	50.0	43.5		ug/Kg		87	56 - 134
Xylenes, Total	100	114		ug/Kg		114	79 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	114		74 - 135
Dibromofluoromethane (Surr)	110		53 - 143
4-Bromofluorobenzene (Surr)	105		59 - 150
1,2-Dichloroethane-d4 (Surr)	92		67 - 132

**Lab Sample ID: LCSD 160-257296/3-A**  
**Matrix: Solid**  
**Analysis Batch: 257269**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 257296**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1-Trichloroethane	50.0	53.2		ug/Kg		106	71 - 127	3	20
1,1,1,2-Tetrachloroethane	50.0	45.3		ug/Kg		91	52 - 140	1	20
1,1,1,2-Trichloroethane	50.0	47.9		ug/Kg		96	79 - 122	2	20
1,1-Dichloroethane	50.0	47.4		ug/Kg		95	80 - 120	2	20
1,1-Dichloroethene	50.0	59.1		ug/Kg		118	71 - 126	0	20
1,2,4-Trichlorobenzene	50.0	51.7		ug/Kg		103	80 - 128	3	20
1,2-Dibromo-3-Chloropropane	50.0	51.4		ug/Kg		103	69 - 130	1	20
1,2-Dichlorobenzene	50.0	49.7		ug/Kg		99	80 - 122	0	20
1,2-Dichloroethane	50.0	43.1		ug/Kg		86	68 - 128	0	20
1,2-Dichloropropane	50.0	46.0		ug/Kg		92	80 - 126	1	20
1,3-Dichlorobenzene	50.0	52.0		ug/Kg		104	80 - 122	0	20
1,4-Dichlorobenzene	50.0	51.2		ug/Kg		102	80 - 120	1	20
2-Butanone (MEK)	50.0	41.1		ug/Kg		82	41 - 140	0	20
2-Hexanone	50.0	39.8		ug/Kg		80	63 - 136	5	20
4-Methyl-2-pentanone (MIBK)	50.0	43.8		ug/Kg		88	67 - 130	2	20
Acetone	50.0	46.6		ug/Kg		93	39 - 140	12	20
Benzene	50.0	50.7		ug/Kg		101	80 - 120	1	20
Bromoform	50.0	54.1		ug/Kg		108	67 - 135	1	20
Bromomethane	50.0	42.6		ug/Kg		85	61 - 132	3	20
Carbon disulfide	50.0	57.9		ug/Kg		116	74 - 124	1	20
Carbon tetrachloride	50.0	56.5		ug/Kg		113	68 - 130	1	20

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCSD 160-257296/3-A**

**Matrix: Solid**

**Analysis Batch: 257269**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

**Prep Batch: 257296**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chlorobenzene	50.0	53.3		ug/Kg		107	80 - 120	1	20
Dibromochloromethane	50.0	54.6		ug/Kg		109	77 - 126	0	20
Chloroethane	50.0	41.2		ug/Kg		82	73 - 129	3	20
Chloroform	50.0	49.4		ug/Kg		99	78 - 120	2	20
Chloromethane	50.0	43.9		ug/Kg		88	69 - 123	4	20
cis-1,2-Dichloroethene	50.0	51.4		ug/Kg		103	80 - 121	2	20
cis-1,3-Dichloropropene	50.0	50.5		ug/Kg		101	78 - 127	4	20
Cyclohexane	50.0	57.1		ug/Kg		114	77 - 130	1	20
Bromodichloromethane	50.0	49.2		ug/Kg		98	78 - 124	1	20
Dichlorodifluoromethane	50.0	50.8		ug/Kg		102	51 - 139	2	20
Ethylbenzene	50.0	50.6		ug/Kg		101	79 - 126	2	20
1,2-Dibromoethane (EDB)	50.0	51.3		ug/Kg		103	75 - 128	3	20
Isopropylbenzene	50.0	48.1		ug/Kg		96	77 - 140	0	20
Methyl acetate	250	256		ug/Kg		102	78 - 129	3	20
Methyl tert-butyl ether	50.0	49.8		ug/Kg		100	75 - 126	4	20
Methylcyclohexane	50.0	49.5		ug/Kg		99	75 - 126	2	20
Methylene Chloride	50.0	51.4		ug/Kg		103	76 - 120	3	20
m-Xylene & p-Xylene	50.0	56.4		ug/Kg		113	79 - 133	1	20
o-Xylene	50.0	56.0		ug/Kg		112	76 - 133	3	20
Styrene	50.0	54.0		ug/Kg		108	80 - 129	1	20
Tetrachloroethene	50.0	59.6		ug/Kg		119	76 - 126	3	20
Toluene	50.0	50.9		ug/Kg		102	76 - 136	1	20
trans-1,2-Dichloroethene	50.0	55.7		ug/Kg		111	76 - 122	0	20
trans-1,3-Dichloropropene	50.0	50.7		ug/Kg		101	77 - 136	3	20
Trichloroethene	50.0	52.7		ug/Kg		105	66 - 130	2	20
Trichlorofluoromethane	50.0	45.8		ug/Kg		92	56 - 140	2	20
Vinyl chloride	50.0	43.4		ug/Kg		87	56 - 134	0	20
Xylenes, Total	100	112		ug/Kg		112	79 - 132	2	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Toluene-d8 (Surr)	112		74 - 135
Dibromofluoromethane (Surr)	111		53 - 143
4-Bromofluorobenzene (Surr)	107		59 - 150
1,2-Dichloroethane-d4 (Surr)	92		67 - 132

**Lab Sample ID: MB 160-258396/7**

**Matrix: Water**

**Analysis Batch: 258396**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.29	ug/L			06/28/16 20:06	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.43	ug/L			06/28/16 20:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	0.25	ug/L			06/28/16 20:06	1
1,1,2-Trichloroethane	ND		5.0	0.57	ug/L			06/28/16 20:06	1
1,1-Dichloroethane	ND		5.0	0.39	ug/L			06/28/16 20:06	1
1,1-Dichloroethene	ND		5.0	0.37	ug/L			06/28/16 20:06	1
1,2,4-Trichlorobenzene	ND		5.0	0.55	ug/L			06/28/16 20:06	1
1,2-Dibromo-3-Chloropropane	ND		10	1.2	ug/L			06/28/16 20:06	1

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: MB 160-258396/7**

**Matrix: Water**

**Analysis Batch: 258396**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene	ND		5.0	0.28	ug/L			06/28/16 20:06	1
1,2-Dichloroethane	ND		5.0	0.37	ug/L			06/28/16 20:06	1
1,2-Dichloropropane	ND		5.0	0.32	ug/L			06/28/16 20:06	1
1,3-Dichlorobenzene	ND		5.0	0.23	ug/L			06/28/16 20:06	1
1,4-Dichlorobenzene	ND		5.0	0.35	ug/L			06/28/16 20:06	1
2-Butanone (MEK)	ND		20	0.39	ug/L			06/28/16 20:06	1
2-Hexanone	ND		20	0.59	ug/L			06/28/16 20:06	1
4-Methyl-2-pentanone (MIBK)	ND		20	0.33	ug/L			06/28/16 20:06	1
Acetone	ND		20	6.7	ug/L			06/28/16 20:06	1
Benzene	ND		5.0	0.25	ug/L			06/28/16 20:06	1
Bromoform	ND		5.0	0.37	ug/L			06/28/16 20:06	1
Bromomethane	ND		10	0.40	ug/L			06/28/16 20:06	1
Carbon disulfide	ND		5.0	0.37	ug/L			06/28/16 20:06	1
Carbon tetrachloride	ND		5.0	0.36	ug/L			06/28/16 20:06	1
Chlorobenzene	ND		5.0	0.38	ug/L			06/28/16 20:06	1
Dibromochloromethane	ND		5.0	0.33	ug/L			06/28/16 20:06	1
Chloroethane	ND		10	0.38	ug/L			06/28/16 20:06	1
Chloroform	ND		5.0	0.15	ug/L			06/28/16 20:06	1
Chloromethane	ND		10	0.55	ug/L			06/28/16 20:06	1
cis-1,2-Dichloroethene	ND		5.0	0.16	ug/L			06/28/16 20:06	1
cis-1,3-Dichloropropene	ND		5.0	0.34	ug/L			06/28/16 20:06	1
Cyclohexane	ND		10	0.36	ug/L			06/28/16 20:06	1
Bromodichloromethane	ND		5.0	0.25	ug/L			06/28/16 20:06	1
Dichlorodifluoromethane	ND		10	0.45	ug/L			06/28/16 20:06	1
Ethylbenzene	ND		5.0	0.30	ug/L			06/28/16 20:06	1
1,2-Dibromoethane (EDB)	ND		5.0	0.44	ug/L			06/28/16 20:06	1
Isopropylbenzene	ND		5.0	0.26	ug/L			06/28/16 20:06	1
Methyl acetate	ND		25	2.3	ug/L			06/28/16 20:06	1
Methyl tert-butyl ether	ND		5.0	0.40	ug/L			06/28/16 20:06	1
Methylcyclohexane	ND		10	0.26	ug/L			06/28/16 20:06	1
Methylene Chloride	ND		5.0	1.7	ug/L			06/28/16 20:06	1
m-Xylene & p-Xylene	ND		5.0	0.57	ug/L			06/28/16 20:06	1
o-Xylene	ND		5.0	0.32	ug/L			06/28/16 20:06	1
Styrene	ND		5.0	0.35	ug/L			06/28/16 20:06	1
Tetrachloroethene	ND		5.0	0.28	ug/L			06/28/16 20:06	1
Toluene	ND		5.0	1.0	ug/L			06/28/16 20:06	1
trans-1,2-Dichloroethene	ND		5.0	0.18	ug/L			06/28/16 20:06	1
trans-1,3-Dichloropropene	ND		5.0	0.35	ug/L			06/28/16 20:06	1
Trichloroethene	ND		5.0	0.29	ug/L			06/28/16 20:06	1
Trichlorofluoromethane	ND		5.0	0.22	ug/L			06/28/16 20:06	1
Vinyl chloride	ND		5.0	0.43	ug/L			06/28/16 20:06	1
Xylenes, Total	ND		10	0.85	ug/L			06/28/16 20:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	109		80 - 129		06/28/16 20:06	1
Dibromofluoromethane (Surr)	96		80 - 121		06/28/16 20:06	1
4-Bromofluorobenzene (Surr)	103		71 - 139		06/28/16 20:06	1
1,2-Dichloroethane-d4 (Surr)	91		76 - 121		06/28/16 20:06	1

TestAmerica St. Louis



# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

Lab Sample ID: LCS 160-258396/4  
 Matrix: Water  
 Analysis Batch: 258396

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	53.3		ug/L		107	76 - 120
1,1,2,2-Tetrachloroethane	50.0	48.5		ug/L		97	80 - 120
1,1,2-Trichloroethane	50.0	50.2		ug/L		100	80 - 120
1,1-Dichloroethane	50.0	50.6		ug/L		101	80 - 120
1,1-Dichloroethene	50.0	54.7		ug/L		109	77 - 126
1,2,4-Trichlorobenzene	50.0	52.4		ug/L		105	80 - 120
1,2-Dibromo-3-Chloropropane	50.0	48.3		ug/L		97	77 - 125
1,2-Dichlorobenzene	50.0	51.0		ug/L		102	80 - 120
1,2-Dichloroethane	50.0	46.3		ug/L		93	69 - 124
1,2-Dichloropropane	50.0	48.8		ug/L		98	80 - 120
1,3-Dichlorobenzene	50.0	51.7		ug/L		103	80 - 120
1,4-Dichlorobenzene	50.0	51.8		ug/L		104	80 - 120
2-Butanone (MEK)	50.0	45.1		ug/L		90	70 - 130
2-Hexanone	50.0	43.6		ug/L		87	64 - 136
4-Methyl-2-pentanone (MIBK)	50.0	50.7		ug/L		101	76 - 129
Acetone	50.0	47.7		ug/L		95	63 - 131
Benzene	50.0	52.2		ug/L		104	80 - 120
Bromoform	50.0	46.4		ug/L		93	80 - 120
Bromomethane	50.0	62.2		ug/L		124	57 - 139
Carbon disulfide	50.0	57.8		ug/L		116	79 - 126
Carbon tetrachloride	50.0	53.4		ug/L		107	73 - 123
Chlorobenzene	50.0	53.3		ug/L		107	80 - 120
Dibromochloromethane	50.0	49.2		ug/L		98	80 - 120
Chloroethane	50.0	63.0		ug/L		126	52 - 140
Chloroform	50.0	49.8		ug/L		100	80 - 120
Chloromethane	50.0	49.5		ug/L		99	70 - 127
cis-1,2-Dichloroethene	50.0	49.4		ug/L		99	80 - 120
cis-1,3-Dichloropropene	50.0	49.4		ug/L		99	80 - 122
Cyclohexane	50.0	56.6		ug/L		113	80 - 120
Bromodichloromethane	50.0	47.8		ug/L		96	80 - 120
Dichlorodifluoromethane	50.0	50.7		ug/L		101	62 - 140
Ethylbenzene	50.0	54.5		ug/L		109	80 - 120
1,2-Dibromoethane (EDB)	50.0	47.6		ug/L		95	80 - 120
Isopropylbenzene	50.0	51.3		ug/L		103	80 - 121
Methyl acetate	250	256		ug/L		102	80 - 127
Methyl tert-butyl ether	50.0	50.5		ug/L		101	80 - 120
Methylcyclohexane	50.0	54.8		ug/L		110	80 - 120
Methylene Chloride	50.0	51.4		ug/L		103	80 - 120
m-Xylene & p-Xylene	50.0	56.6		ug/L		113	80 - 120
o-Xylene	50.0	57.6		ug/L		115	80 - 125
Styrene	50.0	54.8		ug/L		110	80 - 120
Tetrachloroethene	50.0	52.6		ug/L		105	80 - 120
Toluene	50.0	51.9		ug/L		104	80 - 120
trans-1,2-Dichloroethene	50.0	52.3		ug/L		105	80 - 120
trans-1,3-Dichloropropene	50.0	51.2		ug/L		102	80 - 130
Trichloroethene	50.0	50.8		ug/L		102	73 - 120
Trichlorofluoromethane	50.0	57.6		ug/L		115	74 - 130
Vinyl chloride	50.0	60.3		ug/L		121	51 - 140
Xylenes, Total	100	114		ug/L		114	80 - 121

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCS 160-258396/4**  
**Matrix: Water**  
**Analysis Batch: 258396**

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

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	113		80 - 129
Dibromofluoromethane (Surr)	101		80 - 121
4-Bromofluorobenzene (Surr)	101		71 - 139
1,2-Dichloroethane-d4 (Surr)	95		76 - 121

**Lab Sample ID: LCSD 160-258396/5**  
**Matrix: Water**  
**Analysis Batch: 258396**

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	50.0	49.2		ug/L		98	76 - 120	8	20
1,1,2,2-Tetrachloroethane	50.0	49.2		ug/L		98	80 - 120	1	20
1,1,2-Trichloroethane	50.0	48.0		ug/L		96	80 - 120	4	20
1,1-Dichloroethane	50.0	47.8		ug/L		96	80 - 120	6	20
1,1-Dichloroethene	50.0	51.9		ug/L		104	77 - 126	5	20
1,2,4-Trichlorobenzene	50.0	49.7		ug/L		99	80 - 120	5	20
1,2-Dibromo-3-Chloropropane	50.0	46.2		ug/L		92	77 - 125	5	20
1,2-Dichlorobenzene	50.0	49.7		ug/L		99	80 - 120	3	20
1,2-Dichloroethane	50.0	44.7		ug/L		89	69 - 124	3	20
1,2-Dichloropropane	50.0	48.0		ug/L		96	80 - 120	2	20
1,3-Dichlorobenzene	50.0	51.3		ug/L		103	80 - 120	1	20
1,4-Dichlorobenzene	50.0	51.6		ug/L		103	80 - 120	0	20
2-Butanone (MEK)	50.0	45.2		ug/L		90	70 - 130	0	20
2-Hexanone	50.0	45.6		ug/L		91	64 - 136	5	20
4-Methyl-2-pentanone (MIBK)	50.0	48.2		ug/L		96	76 - 129	5	20
Acetone	50.0	44.3		ug/L		89	63 - 131	7	20
Benzene	50.0	49.9		ug/L		100	80 - 120	4	20
Bromoform	50.0	47.1		ug/L		94	80 - 120	1	20
Bromomethane	50.0	55.3		ug/L		111	57 - 139	12	20
Carbon disulfide	50.0	53.9		ug/L		108	79 - 126	7	20
Carbon tetrachloride	50.0	49.3		ug/L		99	73 - 123	8	20
Chlorobenzene	50.0	51.7		ug/L		103	80 - 120	3	20
Dibromochloromethane	50.0	49.7		ug/L		99	80 - 120	1	20
Chloroethane	50.0	55.0		ug/L		110	52 - 140	14	20
Chloroform	50.0	47.2		ug/L		94	80 - 120	5	20
Chloromethane	50.0	45.3		ug/L		91	70 - 127	9	20
cis-1,2-Dichloroethene	50.0	47.2		ug/L		94	80 - 120	5	20
cis-1,3-Dichloropropene	50.0	49.5		ug/L		99	80 - 122	0	20
Cyclohexane	50.0	52.0		ug/L		104	80 - 120	8	20
Bromodichloromethane	50.0	47.2		ug/L		94	80 - 120	1	20
Dichlorodifluoromethane	50.0	47.1		ug/L		94	62 - 140	7	20
Ethylbenzene	50.0	51.2		ug/L		102	80 - 120	6	20
1,2-Dibromoethane (EDB)	50.0	48.5		ug/L		97	80 - 120	2	20
Isopropylbenzene	50.0	49.6		ug/L		99	80 - 121	3	20
Methyl acetate	250	258		ug/L		103	80 - 127	1	20
Methyl tert-butyl ether	50.0	48.7		ug/L		97	80 - 120	4	20
Methylcyclohexane	50.0	50.1		ug/L		100	80 - 120	9	20
Methylene Chloride	50.0	48.6		ug/L		97	80 - 120	5	20

TestAmerica St. Louis



# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCSD 160-258396/5**  
**Matrix: Water**  
**Analysis Batch: 258396**

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
m-Xylene & p-Xylene	50.0	53.4		ug/L		107	80 - 120	6	20
o-Xylene	50.0	53.8		ug/L		108	80 - 125	7	20
Styrene	50.0	53.3		ug/L		107	80 - 120	3	20
Tetrachloroethene	50.0	49.9		ug/L		100	80 - 120	5	20
Toluene	50.0	49.7		ug/L		99	80 - 120	4	20
trans-1,2-Dichloroethene	50.0	49.3		ug/L		99	80 - 120	6	20
trans-1,3-Dichloropropene	50.0	51.5		ug/L		103	80 - 130	1	20
Trichloroethene	50.0	48.4		ug/L		97	73 - 120	5	20
Trichlorofluoromethane	50.0	50.9		ug/L		102	74 - 130	12	20
Vinyl chloride	50.0	53.3		ug/L		107	51 - 140	12	20
Xylenes, Total	100	107		ug/L		107	80 - 121	6	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Toluene-d8 (Surr)	110		80 - 129
Dibromofluoromethane (Surr)	101		80 - 121
4-Bromofluorobenzene (Surr)	102		71 - 139
1,2-Dichloroethane-d4 (Surr)	95		76 - 121

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 160-257942/1-A**  
**Matrix: Solid**  
**Analysis Batch: 259984**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 257942**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Acenaphthylene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Anthracene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Benzo[a]anthracene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Benzo[a]pyrene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Benzo[b]fluoranthene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Benzo[g,h,i]perylene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Benzo[k]fluoranthene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Chrysene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Dibenz(a,h)anthracene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Fluoranthene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Fluorene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Indeno[1,2,3-cd]pyrene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
1-Methylnaphthalene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
2-Methylnaphthalene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Naphthalene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Phenanthrene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1
Pyrene	ND		330	33	ug/Kg		06/24/16 17:32	07/11/16 15:14	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	86		59 - 110	06/24/16 17:32	07/11/16 15:14	1
Nitrobenzene-d5 (Surr)	81		44 - 120	06/24/16 17:32	07/11/16 15:14	1

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 160-257942/1-A**  
**Matrix: Solid**  
**Analysis Batch: 259984**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 257942**

Surrogate	MB MB %Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	84		59 - 98	06/24/16 17:32	07/11/16 15:14	1

**Lab Sample ID: 160-17824-28 MS**  
**Matrix: Solid**  
**Analysis Batch: 259984**

**Client Sample ID: SB-17 (0-2') 20160615-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257942**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	Limits
				Result	Qualifier				
Acenaphthene	ND		37.6	43.6	J	ug/Kg	☼	NC	53 - 105
Acenaphthylene	64	J F2 F1	37.6	82.5	J F1	ug/Kg	☼	49	55 - 107
Anthracene	53	J F1	37.6	92.5	J F1	ug/Kg	☼	106	55 - 103
Benzo[a]anthracene	310	J F2	37.6	379	4	ug/Kg	☼	174	48 - 112
Benzo[a]pyrene	300	J F2	37.6	350	J 4	ug/Kg	☼	125	46 - 117
Benzo[b]fluoranthene	470	F2	37.6	529	4	ug/Kg	☼	165	45 - 125
Benzo[g,h,i]perylene	210	J F2	37.6	286	J 4	ug/Kg	☼	200	24 - 134
Benzo[k]fluoranthene	160	J F2	37.6	199	J 4	ug/Kg	☼	102	43 - 114
Chrysene	320	J F2	37.6	387	4	ug/Kg	☼	166	45 - 115
Dibenz(a,h)anthracene	47	J	37.6	80.8	J	ug/Kg	☼	90	30 - 134
Fluoranthene	580	F2	37.6	588	4	ug/Kg	☼	29	45 - 109
Fluorene	ND		37.6	49.8	J	ug/Kg	☼	NC	45 - 109
Indeno[1,2,3-cd]pyrene	440		37.6	492	4	ug/Kg	☼	141	30 - 136
1-Methylnaphthalene	ND		37.6	ND		ug/Kg	☼	NC	
2-Methylnaphthalene	ND		37.6	ND		ug/Kg	☼	NC	55 - 97
Naphthalene	ND		37.6	ND		ug/Kg	☼	NC	54 - 98
Phenanthrene	230	J	37.6	272	J 4	ug/Kg	☼	122	53 - 106
Pyrene	490	F2	37.6	546	4	ug/Kg	☼	144	39 - 130

Surrogate	MS MS %Recovery	Qualifier	Limits
2-Fluorobiphenyl (Surr)	91		59 - 110
Nitrobenzene-d5 (Surr)	79		44 - 120
Terphenyl-d14 (Surr)	86		59 - 98

**Lab Sample ID: 160-17824-28 MSD**  
**Matrix: Solid**  
**Analysis Batch: 259984**

**Client Sample ID: SB-17 (0-2') 20160615-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257942**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	
				Result	Qualifier					RPD	Limit
Acenaphthene	ND		37.6	47.4	J	ug/Kg	☼	NC	53 - 105	8	30
Acenaphthylene	64	J F2 F1	37.6	42.9	J F1 F2	ug/Kg	☼	-57	55 - 107	63	30
Anthracene	53	J F1	37.6	73.9	J	ug/Kg	☼	56	55 - 103	22	30
Benzo[a]anthracene	310	J F2	37.6	204	J 4 F2	ug/Kg	☼	-291	48 - 112	60	30
Benzo[a]pyrene	300	J F2	37.6	177	J 4 F2	ug/Kg	☼	-334	46 - 117	66	30
Benzo[b]fluoranthene	470	F2	37.6	267	J 4 F2	ug/Kg	☼	-532	45 - 125	66	30
Benzo[g,h,i]perylene	210	J F2	37.6	137	J 4 F2	ug/Kg	☼	-195	24 - 134	70	30
Benzo[k]fluoranthene	160	J F2	37.6	96.8	J 4 F2	ug/Kg	☼	-169	43 - 114	69	30
Chrysene	320	J F2	37.6	212	J 4 F2	ug/Kg	☼	-299	45 - 115	58	30
Dibenz(a,h)anthracene	47	J	37.6	62.2	J	ug/Kg	☼	41	30 - 134	26	30
Fluoranthene	580	F2	37.6	332	J 4 F2	ug/Kg	☼	-653	45 - 109	56	30
Fluorene	ND		37.6	45.7	J	ug/Kg	☼	NC	45 - 109	9	30

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 160-17824-28 MSD

Matrix: Solid

Analysis Batch: 259984

Client Sample ID: SB-17 (0-2') 20160615-01

Prep Type: Total/NA

Prep Batch: 257942

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Indeno[1,2,3-cd]pyrene	440		37.6	362	J 4	ug/Kg	*	-203	30 - 136	30	30	
1-Methylnaphthalene	ND		37.6	ND		ug/Kg	*	NC		NC		
2-Methylnaphthalene	ND		37.6	ND		ug/Kg	*	NC	55 - 97	NC	30	
Naphthalene	ND		37.6	ND		ug/Kg	*	NC	54 - 98	NC	30	
Phenanthrene	230	J	37.6	241	J 4	ug/Kg	*	39	53 - 106	12	30	
Pyrene	490	F2	37.6	321	J 4 F2	ug/Kg	*	-455	39 - 130	52	30	

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl (Surr)	88		59 - 110
Nitrobenzene-d5 (Surr)	82		44 - 120
Terphenyl-d14 (Surr)	85		59 - 98

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 160-257942/1-A

Matrix: Solid

Analysis Batch: 260555

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 257942

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1-Methylnaphthalene	ND		0.0066	0.0010	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
2-Methylnaphthalene	ND		0.0066	0.00033	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Acenaphthene	ND		0.0066	0.0011	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Acenaphthylene	ND		0.0066	0.00080	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Anthracene	ND		0.0066	0.00050	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Benzo[a]anthracene	ND		0.0066	0.00061	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Benzo[a]pyrene	ND		0.0066	0.00047	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Benzo[b]fluoranthene	ND		0.0066	0.00087	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Benzo[g,h,i]perylene	ND		0.0066	0.00064	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Benzo[k]fluoranthene	ND		0.0066	0.0011	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Chrysene	ND		0.0066	0.00064	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Dibenz(a,h)anthracene	ND		0.0066	0.0015	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Fluoranthene	ND		0.0066	0.00077	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Fluorene	ND		0.0066	0.00087	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Indeno[1,2,3-cd]pyrene	ND		0.0066	0.00093	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Naphthalene	ND		0.0066	0.0010	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Phenanthrene	0.00155	J	0.0066	0.00062	mg/Kg		06/24/16 17:32	07/14/16 15:46	1
Pyrene	ND		0.0066	0.00055	mg/Kg		06/24/16 17:32	07/14/16 15:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	77		33 - 128	06/24/16 17:32	07/14/16 15:46	1
Nitrobenzene-d5 (Surr)	75		43 - 113	06/24/16 17:32	07/14/16 15:46	1
Terphenyl-d14 (Surr)	77		28 - 125	06/24/16 17:32	07/14/16 15:46	1

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: LCS 160-257942/2-A**

**Matrix: Solid**

**Analysis Batch: 260555**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 257942**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1-Methylnaphthalene	0.0333	0.0251		mg/Kg		75	70 - 130
2-Methylnaphthalene	0.0333	0.0251		mg/Kg		75	70 - 130
Acenaphthene	0.0333	0.0257		mg/Kg		77	55 - 92
Acenaphthylene	0.0333	0.0245		mg/Kg		74	55 - 93
Anthracene	0.0333	0.0242		mg/Kg		73	54 - 100
Benzo[a]anthracene	0.0333	0.0264		mg/Kg		79	59 - 104
Benzo[a]pyrene	0.0333	0.0251		mg/Kg		75	55 - 101
Benzo[b]fluoranthene	0.0333	0.0320		mg/Kg		96	54 - 113
Benzo[g,h,i]perylene	0.0333	0.0280		mg/Kg		84	52 - 95
Benzo[k]fluoranthene	0.0333	0.0248		mg/Kg		74	50 - 110
Chrysene	0.0333	0.0275		mg/Kg		82	61 - 99
Dibenz(a,h)anthracene	0.0333	0.0269		mg/Kg		81	43 - 110
Fluoranthene	0.0333	0.0266		mg/Kg		80	55 - 106
Fluorene	0.0333	0.0256		mg/Kg		77	56 - 94
Indeno[1,2,3-cd]pyrene	0.0333	0.0254		mg/Kg		76	35 - 121
Naphthalene	0.0333	0.0257		mg/Kg		77	59 - 93
Phenanthrene	0.0333	0.0265		mg/Kg		80	58 - 97
Pyrene	0.0333	0.0237		mg/Kg		71	61 - 102

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl (Surr)	78		33 - 128
Nitrobenzene-d5 (Surr)	76		43 - 113
Terphenyl-d14 (Surr)	69		28 - 125

**Lab Sample ID: 160-17824-20 MS**

**Matrix: Solid**

**Analysis Batch: 260555**

**Client Sample ID: SB-22 (0-2') 20160614-01**

**Prep Type: Total/NA**

**Prep Batch: 257942**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
1-Methylnaphthalene	0.0085	F2	0.0374	0.0426		mg/Kg	☼	91	50 - 150
2-Methylnaphthalene	ND	F1 F2	0.0374	0.0420		mg/Kg	☼	112	50 - 150
Acenaphthene	ND	F1 F2	0.0374	0.0483	F1	mg/Kg	☼	129	48 - 100
Acenaphthylene	0.18	F2	0.0374	0.316	4	mg/Kg	☼	375	46 - 105
Anthracene	0.035	F1 F2	0.0374	0.106	F1	mg/Kg	☼	190	40 - 121
Benzo[a]anthracene	0.15	F1 F2	0.0374	0.373	F1	mg/Kg	☼	606	50 - 120
Benzo[a]pyrene	0.17	F2	0.0374	0.339	4	mg/Kg	☼	463	38 - 134
Benzo[b]fluoranthene	0.22	F2	0.0374	0.486	E 4	mg/Kg	☼	697	33 - 150
Benzo[g,h,i]perylene	0.16		0.0374	0.216	4	mg/Kg	☼	137	20 - 150
Benzo[k]fluoranthene	0.12	F1 F2	0.0374	0.197	F1	mg/Kg	☼	196	28 - 147
Chrysene	0.19	F2	0.0374	0.387	E 4	mg/Kg	☼	522	51 - 108
Dibenz(a,h)anthracene	0.032		0.0374	0.0592		mg/Kg	☼	74	44 - 118
Fluoranthene	0.23	F2	0.0374	0.449	E 4	mg/Kg	☼	581	64 - 101
Fluorene	ND	F1 F2	0.0374	0.0615	F1	mg/Kg	☼	164	30 - 120
Indeno[1,2,3-cd]pyrene	0.17		0.0374	0.232	4	mg/Kg	☼	170	47 - 123
Naphthalene	0.019	F1 F2	0.0374	0.0526		mg/Kg	☼	89	40 - 103
Phenanthrene	0.071	B F1	0.0374	0.180	F1	mg/Kg	☼	291	52 - 103
Pyrene	0.26	F2	0.0374	0.532	E 4	mg/Kg	☼	731	32 - 146

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: 160-17824-20 MS**  
**Matrix: Solid**  
**Analysis Batch: 260555**

**Client Sample ID: SB-22 (0-2') 20160614-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257942**

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	72		33 - 128
Nitrobenzene-d5 (Surr)	74		43 - 113
Terphenyl-d14 (Surr)	77		28 - 125

**Lab Sample ID: 160-17824-20 MSD**  
**Matrix: Solid**  
**Analysis Batch: 260555**

**Client Sample ID: SB-22 (0-2') 20160614-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257942**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
				Result	Qualifier						
1-Methylnaphthalene	0.0085	F2	0.0375	0.0586	F2	mg/Kg	☼	134	50 - 150	32	20
2-Methylnaphthalene	ND	F1 F2	0.0375	0.0594	F1 F2	mg/Kg	☼	158	50 - 150	34	20
Acenaphthene	ND	F1 F2	0.0375	0.0704	F1 F2	mg/Kg	☼	188	48 - 100	37	20
Acenaphthylene	0.18	F2	0.0375	0.503	E 4 F2	mg/Kg	☼	873	46 - 105	46	20
Anthracene	0.035	F1 F2	0.0375	0.135	F1 F2	mg/Kg	☼	266	40 - 121	24	20
Benzo[a]anthracene	0.15	F1 F2	0.0375	0.527	E F1 F2	mg/Kg	☼	1015	50 - 120	34	20
Benzo[a]pyrene	0.17	F2	0.0375	0.516	E 4 F2	mg/Kg	☼	931	38 - 134	41	20
Benzo[b]fluoranthene	0.22	F2	0.0375	0.851	E 4 F2	mg/Kg	☼	1667	33 - 150	55	20
Benzo[g,h,i]perylene	0.16		0.0375	0.222	4	mg/Kg	☼	152	20 - 150	3	20
Benzo[k]fluoranthene	0.12	F1 F2	0.0375	0.368	F1 F2	mg/Kg	☼	654	28 - 147	61	20
Chrysene	0.19	F2	0.0375	0.567	E 4 F2	mg/Kg	☼	1000	51 - 108	38	20
Dibenz(a,h)anthracene	0.032		0.0375	0.0615		mg/Kg	☼	80	44 - 118	4	20
Fluoranthene	0.23	F2	0.0375	0.665	E 4 F2	mg/Kg	☼	1154	64 - 101	39	20
Fluorene	ND	F1 F2	0.0375	0.0785	F1 F2	mg/Kg	☼	209	30 - 120	24	20
Indeno[1,2,3-cd]pyrene	0.17		0.0375	0.244	4	mg/Kg	☼	203	47 - 123	5	20
Naphthalene	0.019	F1 F2	0.0375	0.0890	F1 F2	mg/Kg	☼	186	40 - 103	51	20
Phenanthrene	0.071	B F1	0.0375	0.217	F1	mg/Kg	☼	389	52 - 103	19	20
Pyrene	0.26	F2	0.0375	0.680	E 4 F2	mg/Kg	☼	1125	32 - 146	24	20

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	78		33 - 128
Nitrobenzene-d5 (Surr)	69		43 - 113
Terphenyl-d14 (Surr)	71		28 - 125

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

**Lab Sample ID: MB 180-179817/1-A**  
**Matrix: Solid**  
**Analysis Batch: 180499**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 179817**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
PCB-1016	ND		0.83	0.38	ug/Kg		06/22/16 02:20	06/29/16 09:06	1
PCB-1221	ND		0.83	0.60	ug/Kg		06/22/16 02:20	06/29/16 09:06	1
PCB-1232	ND		0.83	0.21	ug/Kg		06/22/16 02:20	06/29/16 09:06	1
PCB-1242	ND		0.83	0.31	ug/Kg		06/22/16 02:20	06/29/16 09:06	1
PCB-1248	ND		0.83	0.20	ug/Kg		06/22/16 02:20	06/29/16 09:06	1
PCB-1254	ND		0.83	0.31	ug/Kg		06/22/16 02:20	06/29/16 09:06	1
PCB-1260	ND		0.83	0.29	ug/Kg		06/22/16 02:20	06/29/16 09:06	1

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# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

**Lab Sample ID: MB 180-179817/1-A**  
**Matrix: Solid**  
**Analysis Batch: 180499**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 179817**

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
DCB Decachlorobiphenyl (Surr)	63		20 - 150	06/22/16 02:20	06/29/16 09:06	1

**Lab Sample ID: LCS 180-179817/2-A**  
**Matrix: Solid**  
**Analysis Batch: 180499**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 179817**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
PCB-1016	66.7	65.2		ug/Kg		98	39 - 114
PCB-1260	66.7	55.5		ug/Kg		83	34 - 123

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl (Surr)	67		20 - 150

**Lab Sample ID: 160-17824-20 MS**  
**Matrix: Solid**  
**Analysis Batch: 180499**

**Client Sample ID: SB-22 (0-2') 20160614-01**  
**Prep Type: Total/NA**  
**Prep Batch: 179817**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
PCB-1016	ND	F1	75.2	101	F1	ug/Kg	☼	135	39 - 114
PCB-1260	43	F2 F1	75.2	58.9	F1	ug/Kg	☼	21	34 - 123

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl (Surr)	205	X	20 - 150

**Lab Sample ID: 160-17824-20 MSD**  
**Matrix: Solid**  
**Analysis Batch: 180499**

**Client Sample ID: SB-22 (0-2') 20160614-01**  
**Prep Type: Total/NA**  
**Prep Batch: 179817**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
PCB-1016	ND	F1	75.7	122	F1	ug/Kg	☼	161	39 - 114	19	30
PCB-1260	43	F2 F1	75.7	71.7		ug/Kg	☼	38	34 - 123	20	30

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl (Surr)	145	p	20 - 150

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

**Lab Sample ID: MB 320-116529/1-A**  
**Matrix: Solid**  
**Analysis Batch: 117801**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 116529**

Analyte	MB MB		RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,3,7,8-TCDD	ND		1.0	0.035	pg/g		07/05/16 11:48	07/14/16 10:39	1
2,3,7,8-TCDF	ND		1.0	0.018	pg/g		07/05/16 11:48	07/14/16 10:39	1
1,2,3,7,8-PeCDD	ND		5.0	0.037	pg/g		07/05/16 11:48	07/14/16 10:39	1
1,2,3,7,8-PeCDF	ND		5.0	0.029	pg/g		07/05/16 11:48	07/14/16 10:39	1
2,3,4,7,8-PeCDF	ND		5.0	0.030	pg/g		07/05/16 11:48	07/14/16 10:39	1

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# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: MB 320-116529/1-A**  
**Matrix: Solid**  
**Analysis Batch: 117801**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 116529**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDD	ND		5.0	0.027	pg/g		07/05/16 11:48	07/14/16 10:39	1
1,2,3,6,7,8-HxCDD	ND		5.0	0.025	pg/g		07/05/16 11:48	07/14/16 10:39	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.021	pg/g		07/05/16 11:48	07/14/16 10:39	1
1,2,3,4,7,8-HxCDF	ND		5.0	0.043	pg/g		07/05/16 11:48	07/14/16 10:39	1
1,2,3,6,7,8-HxCDF	ND		5.0	0.039	pg/g		07/05/16 11:48	07/14/16 10:39	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.042	pg/g		07/05/16 11:48	07/14/16 10:39	1
2,3,4,6,7,8-HxCDF	ND		5.0	0.042	pg/g		07/05/16 11:48	07/14/16 10:39	1
1,2,3,4,6,7,8-HpCDD	0.342	J	5.0	0.034	pg/g		07/05/16 11:48	07/14/16 10:39	1
1,2,3,4,6,7,8-HpCDF	0.0727	J	5.0	0.027	pg/g		07/05/16 11:48	07/14/16 10:39	1
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.032	pg/g		07/05/16 11:48	07/14/16 10:39	1
OCDD	4.47	J	10	0.059	pg/g		07/05/16 11:48	07/14/16 10:39	1
OCDF	0.415	J	10	0.038	pg/g		07/05/16 11:48	07/14/16 10:39	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	81		40 - 135	07/05/16 11:48	07/14/16 10:39	1
13C-2,3,7,8-TCDF	91		40 - 135	07/05/16 11:48	07/14/16 10:39	1
13C-1,2,3,7,8-PeCDD	82		40 - 135	07/05/16 11:48	07/14/16 10:39	1
13C-1,2,3,7,8-PeCDF	90		40 - 135	07/05/16 11:48	07/14/16 10:39	1
13C-1,2,3,6,7,8-HxCDD	91		40 - 135	07/05/16 11:48	07/14/16 10:39	1
13C-1,2,3,4,7,8-HxCDF	88		40 - 135	07/05/16 11:48	07/14/16 10:39	1
13C-1,2,3,4,6,7,8-HpCDD	85		40 - 135	07/05/16 11:48	07/14/16 10:39	1
13C-1,2,3,4,6,7,8-HpCDF	89		40 - 135	07/05/16 11:48	07/14/16 10:39	1
13C-OCDD	79		40 - 135	07/05/16 11:48	07/14/16 10:39	1

**Lab Sample ID: LCS 320-116529/2-A**  
**Matrix: Solid**  
**Analysis Batch: 117801**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 116529**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	20.0	22.8		pg/g		114	77 - 130
2,3,7,8-TCDF	20.0	20.2		pg/g		101	79 - 137
1,2,3,7,8-PeCDD	100	114		pg/g		114	79 - 134
1,2,3,7,8-PeCDF	100	115		pg/g		115	81 - 134
2,3,4,7,8-PeCDF	100	113		pg/g		113	76 - 132
1,2,3,4,7,8-HxCDD	100	103		pg/g		103	65 - 144
1,2,3,6,7,8-HxCDD	100	116		pg/g		116	73 - 147
1,2,3,7,8,9-HxCDD	100	106		pg/g		106	80 - 143
1,2,3,4,7,8-HxCDF	100	109		pg/g		109	72 - 140
1,2,3,6,7,8-HxCDF	100	112		pg/g		112	63 - 152
1,2,3,7,8,9-HxCDF	100	109		pg/g		109	72 - 152
2,3,4,6,7,8-HxCDF	100	110		pg/g		110	72 - 151
1,2,3,4,6,7,8-HpCDD	100	155	*	pg/g		155	86 - 134
1,2,3,4,6,7,8-HpCDF	100	122		pg/g		122	81 - 137
1,2,3,4,7,8,9-HpCDF	100	117		pg/g		117	79 - 139
OCDD	200	304	*	pg/g		152	80 - 137
OCDF	200	240		pg/g		120	75 - 141

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-2,3,7,8-TCDD	69		40 - 135
13C-2,3,7,8-TCDF	78		40 - 135
13C-1,2,3,7,8-PeCDD	70		40 - 135
13C-1,2,3,7,8-PeCDF	78		40 - 135
13C-1,2,3,6,7,8-HxCDD	80		40 - 135
13C-1,2,3,4,7,8-HxCDF	79		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	76		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	79		40 - 135
13C-OCDD	72		40 - 135

**Lab Sample ID: MB 320-118093/1-A**  
**Matrix: Solid**  
**Analysis Batch: 118604**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 118093**

<i>Analyte</i>	<i>MB MB</i>		<i>RL</i>	<i>EDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>Result</i>	<i>Qualifier</i>							
2,3,7,8-TCDD	ND		1.0	0.038	pg/g		07/15/16 13:06	07/20/16 12:50	1
2,3,7,8-TCDF	ND		1.0	0.021	pg/g		07/15/16 13:06	07/20/16 12:50	1
1,2,3,7,8-PeCDD	ND		5.0	0.046	pg/g		07/15/16 13:06	07/20/16 12:50	1
1,2,3,7,8-PeCDF	ND		5.0	0.032	pg/g		07/15/16 13:06	07/20/16 12:50	1
2,3,4,7,8-PeCDF	ND		5.0	0.033	pg/g		07/15/16 13:06	07/20/16 12:50	1
1,2,3,4,7,8-HxCDD	ND		5.0	0.047	pg/g		07/15/16 13:06	07/20/16 12:50	1
1,2,3,6,7,8-HxCDD	ND		5.0	0.043	pg/g		07/15/16 13:06	07/20/16 12:50	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.037	pg/g		07/15/16 13:06	07/20/16 12:50	1
1,2,3,4,7,8-HxCDF	ND		5.0	0.071	pg/g		07/15/16 13:06	07/20/16 12:50	1
1,2,3,6,7,8-HxCDF	ND		5.0	0.064	pg/g		07/15/16 13:06	07/20/16 12:50	1
1,2,3,7,8,9-HxCDF	ND		5.0	0.068	pg/g		07/15/16 13:06	07/20/16 12:50	1
2,3,4,6,7,8-HxCDF	ND		5.0	0.069	pg/g		07/15/16 13:06	07/20/16 12:50	1
1,2,3,4,6,7,8-HpCDD	ND		5.0	0.16	pg/g		07/15/16 13:06	07/20/16 12:50	1
1,2,3,4,6,7,8-HpCDF	ND		5.0	0.080	pg/g		07/15/16 13:06	07/20/16 12:50	1
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.095	pg/g		07/15/16 13:06	07/20/16 12:50	1
OCDD	0.226	J q	10	0.066	pg/g		07/15/16 13:06	07/20/16 12:50	1
OCDF	ND		10	0.074	pg/g		07/15/16 13:06	07/20/16 12:50	1

<i>Isotope Dilution</i>	<i>MB MB</i>		<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
13C-2,3,7,8-TCDD	81		40 - 135	07/15/16 13:06	07/20/16 12:50	1
13C-2,3,7,8-TCDF	84		40 - 135	07/15/16 13:06	07/20/16 12:50	1
13C-1,2,3,7,8-PeCDD	76		40 - 135	07/15/16 13:06	07/20/16 12:50	1
13C-1,2,3,7,8-PeCDF	82		40 - 135	07/15/16 13:06	07/20/16 12:50	1
13C-1,2,3,6,7,8-HxCDD	90		40 - 135	07/15/16 13:06	07/20/16 12:50	1
13C-1,2,3,4,7,8-HxCDF	80		40 - 135	07/15/16 13:06	07/20/16 12:50	1
13C-1,2,3,4,6,7,8-HpCDD	83		40 - 135	07/15/16 13:06	07/20/16 12:50	1
13C-1,2,3,4,6,7,8-HpCDF	86		40 - 135	07/15/16 13:06	07/20/16 12:50	1
13C-OCDD	83		40 - 135	07/15/16 13:06	07/20/16 12:50	1

**Lab Sample ID: LCS 320-118093/2-A**  
**Matrix: Solid**  
**Analysis Batch: 118604**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 118093**

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS LCS</i>		<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
		<i>Result</i>	<i>Qualifier</i>				
2,3,7,8-TCDD	20.0	23.7		pg/g		118	77 - 130
2,3,7,8-TCDF	20.0	20.6		pg/g		103	79 - 137
1,2,3,7,8-PeCDD	100	121		pg/g		121	79 - 134
1,2,3,7,8-PeCDF	100	118		pg/g		118	81 - 134
2,3,4,7,8-PeCDF	100	113		pg/g		113	76 - 132

TestAmerica St. Louis



# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: LCS 320-118093/2-A**  
**Matrix: Solid**  
**Analysis Batch: 118604**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 118093**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,7,8-HxCDD	100	98.1		pg/g		98	65 - 144
1,2,3,6,7,8-HxCDD	100	116		pg/g		116	73 - 147
1,2,3,7,8,9-HxCDD	100	104		pg/g		104	80 - 143
1,2,3,4,7,8-HxCDF	100	116		pg/g		116	72 - 140
1,2,3,6,7,8-HxCDF	100	127		pg/g		127	63 - 152
1,2,3,7,8,9-HxCDF	100	113		pg/g		113	72 - 152
2,3,4,6,7,8-HxCDF	100	122		pg/g		122	72 - 151
1,2,3,4,6,7,8-HpCDD	100	123		pg/g		123	86 - 134
1,2,3,4,6,7,8-HpCDF	100	119		pg/g		119	81 - 137
1,2,3,4,7,8,9-HpCDF	100	117		pg/g		117	79 - 139
OCDD	200	231		pg/g		115	80 - 137
OCDF	200	234		pg/g		117	75 - 141

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	72		40 - 135
13C-2,3,7,8-TCDF	77		40 - 135
13C-1,2,3,7,8-PeCDD	67		40 - 135
13C-1,2,3,7,8-PeCDF	73		40 - 135
13C-1,2,3,6,7,8-HxCDD	83		40 - 135
13C-1,2,3,4,7,8-HxCDF	72		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	72		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	78		40 - 135
13C-OCDD	73		40 - 135

## Method: 6020A - Metals (ICP/MS)

**Lab Sample ID: MB 160-258403/1-A**  
**Matrix: Solid**  
**Analysis Batch: 259625**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 258403**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.756	J	0.87	0.23	mg/Kg		06/29/16 09:00	07/07/16 16:10	2
Lead	ND		0.26	0.087	mg/Kg		06/29/16 09:00	07/07/16 16:10	2
Thallium	ND		0.44	0.13	mg/Kg		06/29/16 09:00	07/07/16 16:10	2
Lithium	0.314	J	0.87	0.26	mg/Kg		06/29/16 09:00	07/07/16 16:10	2

**Lab Sample ID: LCS 160-258403/2-A**  
**Matrix: Solid**  
**Analysis Batch: 259625**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 258403**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Lithium	94.5	95.4	E	mg/Kg		101	80 - 120

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 6020A - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCSSRM 160-258403/3-A**  
**Matrix: Solid**  
**Analysis Batch: 259625**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 258403**

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	Limits
Arsenic	114	126		mg/Kg		110.1	70.0 - 141.2
Lead	102	108		mg/Kg		105.9	70.8 - 128.4
Thallium	200	226		mg/Kg		113.0	69.0 - 131.0

**Lab Sample ID: 160-17824-20 MS**  
**Matrix: Solid**  
**Analysis Batch: 259625**

**Client Sample ID: SB-22 (0-2') 20160614-01**  
**Prep Type: Total/NA**  
**Prep Batch: 258403**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	9.5	B	107	124		mg/Kg	☼	106	75 - 125
Lead	140	F1 F2	107	276	F1	mg/Kg	☼	127	75 - 125
Thallium	ND		21.5	21.3		mg/Kg	☼	99	75 - 125
Lithium	7.0	B	107	125		mg/Kg	☼	110	75 - 125

**Lab Sample ID: 160-17824-20 MSD**  
**Matrix: Solid**  
**Analysis Batch: 259625**

**Client Sample ID: SB-22 (0-2') 20160614-01**  
**Prep Type: Total/NA**  
**Prep Batch: 258403**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	9.5	B	110	132		mg/Kg	☼	111	75 - 125	7	30
Lead	140	F1 F2	110	486	F1 F2	mg/Kg	☼	315	75 - 125	55	30
Thallium	ND		22.0	21.9		mg/Kg	☼	100	75 - 125	3	30
Lithium	7.0	B	110	126		mg/Kg	☼	108	75 - 125	1	30

**Lab Sample ID: MB 160-258404/1-A**  
**Matrix: Solid**  
**Analysis Batch: 259626**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 258404**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.99	0.26	mg/Kg		06/29/16 09:00	07/07/16 18:40	2
Chromium	ND		0.99	0.45	mg/Kg		06/29/16 09:00	07/07/16 18:40	2
Lead	ND		0.30	0.099	mg/Kg		06/29/16 09:00	07/07/16 18:40	2
Thallium	ND		0.50	0.15	mg/Kg		06/29/16 09:00	07/07/16 18:40	2
Lithium	ND		0.99	0.30	mg/Kg		06/29/16 09:00	07/07/16 18:40	2

**Lab Sample ID: LCS 160-258404/2-A**  
**Matrix: Solid**  
**Analysis Batch: 259626**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 258404**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Lithium	93.7	94.6	E	mg/Kg		101	80 - 120

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 6020A - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCSSRM 160-258404/3-A**  
**Matrix: Solid**  
**Analysis Batch: 259626**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 258404**

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	Limits
Arsenic	114	118		mg/Kg		103.6	70.0 - 141.2
Chromium	109	106		mg/Kg		97.5	69.5 - 130.3
Lead	102	102		mg/Kg		99.6	70.8 - 128.4
Thallium	200	219		mg/Kg		109.7	69.0 - 131.0

**Lab Sample ID: 160-17824-28 MS**  
**Matrix: Solid**  
**Analysis Batch: 259626**

**Client Sample ID: SB-17 (0-2') 20160615-01**  
**Prep Type: Total/NA**  
**Prep Batch: 258404**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	8.6		103	112		mg/Kg	☼	100	75 - 125
Chromium	13		103	115		mg/Kg	☼	100	75 - 125
Lead	16		103	113		mg/Kg	☼	94	75 - 125
Thallium	ND		20.6	20.0		mg/Kg	☼	97	75 - 125
Lithium	8.7		103	117		mg/Kg	☼	105	75 - 125

**Lab Sample ID: 160-17824-28 MSD**  
**Matrix: Solid**  
**Analysis Batch: 259626**

**Client Sample ID: SB-17 (0-2') 20160615-01**  
**Prep Type: Total/NA**  
**Prep Batch: 258404**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Arsenic	8.6		113	125		mg/Kg	☼	104	75 - 125	12	30
Chromium	13		113	122		mg/Kg	☼	97	75 - 125	6	30
Lead	16		113	115		mg/Kg	☼	88	75 - 125	2	30
Thallium	ND		22.5	21.5		mg/Kg	☼	96	75 - 125	8	30
Lithium	8.7		113	126		mg/Kg	☼	104	75 - 125	7	30

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-257323/1-A**  
**Matrix: Solid**  
**Analysis Batch: 260169**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 257323**

Analyte	MB MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared		Analyzed		Dil Fac
	Result	Qualifier										
Radium-226	0.005343	U	0.0290	0.0290	1.00	0.322	pCi/g	06/21/16 13:24	07/12/16 12:48			1
Radium-228	-0.07722	U	0.236	0.236		0.264	pCi/g	06/21/16 13:24	07/12/16 12:48			1
Americium-241	0.02407	U	0.0995	0.0995		0.140	pCi/g	06/21/16 13:24	07/12/16 12:48			1
Cesium-137	0.001341	U	0.0611	0.0611		0.111	pCi/g	06/21/16 13:24	07/12/16 12:48			1
Cobalt-60	0.001345	U	0.0658	0.0658		0.0812	pCi/g	06/21/16 13:24	07/12/16 12:48			1
<b>Other Detected Radionuclides</b>	<b>MB Result</b>	<b>MB Qualifier</b>	<b>Count Uncert. (2σ+/-)</b>	<b>Total Uncert. (2σ+/-)</b>	<b>RL</b>	<b>MDC</b>	<b>Unit</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>		
Other Detected Radionuclide	None						pCi/g	06/21/16 13:24	07/12/16 12:48			1

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS) (Continued)

**Lab Sample ID: LCS 160-257323/2-A**  
**Matrix: Solid**  
**Analysis Batch: 260172**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257323**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Americium-241	97.1	97.44		10.3		1.28	pCi/g	100	87 - 116
Cesium-137	29.6	29.38		3.18		0.377	pCi/g	99	87 - 120
Cobalt-60	16.9	17.04		1.79		0.111	pCi/g	101	87 - 115

**Lab Sample ID: 160-17824-3 DU**  
**Matrix: Solid**  
**Analysis Batch: 260169**

**Client Sample ID: SB-19 (0-2') 20160615-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257323**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.525		0.4528		0.134	1.00	0.116	pCi/g	0.28	1
Radium-228	0.239	U	0.2460		0.129		0.170	pCi/g	0.02	1
Americium-241	0.0347	U	0.04662	U	0.108		0.146	pCi/g	0.06	1
Cesium-137	-0.0467	U	-0.02441	U	0.0556		0.0950	pCi/g	0.23	1
Cobalt-60	0.0278	U	0.009297	U	0.0484		0.0580	pCi/g	0.26	1

Other Detected Radionuclides	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Bi-214	0.525		0.4528		0.134		0.116	pCi/g	0.28	1
K-40	4.08		4.509		1.05		0.687	pCi/g	0.21	1
Pb-212	0.230		0.3015		0.0879		0.0947	pCi/g	0.46	1
Pb-214	0.514		0.5984		0.140		0.102	pCi/g	0.34	1
Th-234	1.37		-0.07856	U	0.928		1.60	pCi/g	0.96	1
Tl-208	0.157		0.09860		0.0433		0.0453	pCi/g	0.66	1

**Lab Sample ID: MB 160-257324/1-A**  
**Matrix: Solid**  
**Analysis Batch: 260174**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 257324**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.009406	U	0.0154	0.0155	1.00	0.313	pCi/g	06/21/16 13:29	07/12/16 13:34	1
Radium-228	0.04685	U	0.121	0.121		0.189	pCi/g	06/21/16 13:29	07/12/16 13:34	1
Americium-241	0.04558	U	0.115	0.115		0.196	pCi/g	06/21/16 13:29	07/12/16 13:34	1
Cesium-137	0.01577	U	0.0421	0.0421		0.0747	pCi/g	06/21/16 13:29	07/12/16 13:34	1
Cobalt-60	0.0000	U	0.0158	0.0158		0.0412	pCi/g	06/21/16 13:29	07/12/16 13:34	1

Other Detected Radionuclides	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide	None						pCi/g	06/21/16 13:29	07/12/16 13:34	1

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS) (Continued)

**Lab Sample ID: LCS 160-257324/2-A**  
**Matrix: Solid**  
**Analysis Batch: 260172**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257324**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Americium-241	97.1	98.41		10.4		1.35	pCi/g	101	87 - 116	
Cesium-137	29.6	29.68		3.20		0.282	pCi/g	100	87 - 120	
Cobalt-60	16.9	16.89		1.77		0.112	pCi/g	100	87 - 115	

**Lab Sample ID: 160-17824-25 DU**  
**Matrix: Solid**  
**Analysis Batch: 260175**

**Client Sample ID: SB-18 (0-2') 20160615-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257324**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.868		0.9279		0.187	1.00	0.116	pCi/g	0.16	1
Radium-228	0.606		0.7122		0.186		0.0870	pCi/g	0.26	1
Americium-241	0.0113	U	0.05014	U	0.168		0.282	pCi/g	0.13	1
Cesium-137	0.0220	U	0.007389	U	0.0529		0.0942	pCi/g	0.13	1
Cobalt-60	-0.0531	U	0.03578	U	0.0383		0.114	pCi/g	0.55	1

Other Detected Radionuclides	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Ac-228	0.606		0.7122		0.186		0.0870	pCi/g	0.26	1
Bi-214	0.868		0.9279		0.187		0.116	pCi/g	0.16	1
K-40	8.43		9.261		1.67		0.860	pCi/g	0.25	1
Pb-212	0.360		0.4458		0.120		0.132	pCi/g	0.36	1
Pb-214	0.977		0.9367		0.174		0.111	pCi/g	0.11	1
Tl-208	0.168		0.1403		0.0819		0.0912	pCi/g	0.20	1

## Method: 9310 - Gross Alpha / Beta (GFPC)

**Lab Sample ID: MB 160-259994/1-A**  
**Matrix: Solid**  
**Analysis Batch: 259959**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 259994**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Beta	3.753		2.23	2.26	10.0	3.27	pCi/g	07/11/16 14:19	07/11/16 19:06	1

**Lab Sample ID: LCS 160-259994/2-A**  
**Matrix: Solid**  
**Analysis Batch: 259959**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 259994**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Gross Alpha	27.1	21.81		6.80	10.0	7.15	pCi/g	80	44 - 140	
Gross Beta	26.8	21.15		3.76	10.0	3.07	pCi/g	79	38 - 130	

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 9310 - Gross Alpha / Beta (GFPC) (Continued)

**Lab Sample ID: 160-17824-24 DU**  
**Matrix: Solid**  
**Analysis Batch: 259959**

**Client Sample ID: SB-16 (8-12') 20160615-01**  
**Prep Type: Total/NA**  
**Prep Batch: 259994**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Gross Alpha	11.4		15.19		5.72	10.0	6.45	pCi/g	0.37	1
Gross Beta	12.7		14.23		3.44	10.0	3.69	pCi/g	0.23	1

**Lab Sample ID: MB 160-260133/1-A**  
**Matrix: Solid**  
**Analysis Batch: 260167**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 260133**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	3.636	U	3.70	3.73	10.0	5.92	pCi/g	07/12/16 09:21	07/12/16 19:47	1
Gross Beta	2.517	U	2.20	2.22	10.0	3.47	pCi/g	07/12/16 09:21	07/12/16 19:47	1

**Lab Sample ID: LCS 160-260133/2-A**  
**Matrix: Solid**  
**Analysis Batch: 260167**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 260133**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	27.1	17.64		5.52	10.0	5.29	pCi/g	65	44 - 140
Gross Beta	26.8	23.16		3.69	10.0	2.40	pCi/g	86	38 - 130

# QC Association Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## GC/MS VOA

### Analysis Batch: 257269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-1	SB-30 (1-3') 20160614-01	Total/NA	Solid	8260C	257296
MB 160-257296/1-A	Method Blank	Total/NA	Solid	8260C	257296
LCS 160-257296/2-A	Lab Control Sample	Total/NA	Solid	8260C	257296
LCSD 160-257296/3-A	Lab Control Sample Dup	Total/NA	Solid	8260C	257296

### Prep Batch: 257296

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-1	SB-30 (1-3') 20160614-01	Total/NA	Solid	5035	
MB 160-257296/1-A	Method Blank	Total/NA	Solid	5035	
LCS 160-257296/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 160-257296/3-A	Lab Control Sample Dup	Total/NA	Solid	5035	

### Analysis Batch: 258396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-11	VOC TRIP BLANK 20160615-01	Total/NA	Water	8260C	
MB 160-258396/7	Method Blank	Total/NA	Water	8260C	
LCS 160-258396/4	Lab Control Sample	Total/NA	Water	8260C	
LCSD 160-258396/5	Lab Control Sample Dup	Total/NA	Water	8260C	

## GC/MS Semi VOA

### Prep Batch: 257942

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-2	SB-19 (6-8') 20160615-01	Total/NA	Solid	3550C	
160-17824-3	SB-19 (0-2') 20160615-01	Total/NA	Solid	3550C	
160-17824-18	SB-22 (16-20') 20160614-01	Total/NA	Solid	3550C	
160-17824-19	DUP-A 20160614-01	Total/NA	Solid	3550C	
160-17824-20	SB-22 (0-2') 20160614-01	Total/NA	Solid	3550C	
160-17824-23	SB-16 (0-2') 20160615-01	Total/NA	Solid	3550C	
160-17824-24	SB-16 (8-12') 20160615-01	Total/NA	Solid	3550C	
160-17824-25	SB-18 (0-2') 20160615-01	Total/NA	Solid	3550C	
160-17824-28	SB-17 (0-2') 20160615-01	Total/NA	Solid	3550C	
160-17824-29	DUP-B 20160615-01	Total/NA	Solid	3550C	
160-17824-31	SB-17 (6-8') 20160615-01	Total/NA	Solid	3550C	
160-17824-32	SB-18 (6-8') 20160615-01	Total/NA	Solid	3550C	
MB 160-257942/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 160-257942/2-A	Lab Control Sample	Total/NA	Solid	3550C	
160-17824-20 MS	SB-22 (0-2') 20160614-01	Total/NA	Solid	3550C	
160-17824-20 MSD	SB-22 (0-2') 20160614-01	Total/NA	Solid	3550C	
160-17824-28 MS	SB-17 (0-2') 20160615-01	Total/NA	Solid	3550C	
160-17824-28 MSD	SB-17 (0-2') 20160615-01	Total/NA	Solid	3550C	

### Analysis Batch: 259984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-2	SB-19 (6-8') 20160615-01	Total/NA	Solid	8270D	257942
160-17824-3	SB-19 (0-2') 20160615-01	Total/NA	Solid	8270D	257942
160-17824-19	DUP-A 20160614-01	Total/NA	Solid	8270D	257942
160-17824-23	SB-16 (0-2') 20160615-01	Total/NA	Solid	8270D	257942
160-17824-24	SB-16 (8-12') 20160615-01	Total/NA	Solid	8270D	257942
160-17824-25	SB-18 (0-2') 20160615-01	Total/NA	Solid	8270D	257942

TestAmerica St. Louis

# QC Association Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## GC/MS Semi VOA (Continued)

### Analysis Batch: 259984 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-28	SB-17 (0-2') 20160615-01	Total/NA	Solid	8270D	257942
MB 160-257942/1-A	Method Blank	Total/NA	Solid	8270D	257942
160-17824-28 MS	SB-17 (0-2') 20160615-01	Total/NA	Solid	8270D	257942
160-17824-28 MSD	SB-17 (0-2') 20160615-01	Total/NA	Solid	8270D	257942

### Analysis Batch: 260156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-25	SB-18 (0-2') 20160615-01	Total/NA	Solid	8270D	257942

### Analysis Batch: 260555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-18	SB-22 (16-20') 20160614-01	Total/NA	Solid	8270D SIM	257942
160-17824-20	SB-22 (0-2') 20160614-01	Total/NA	Solid	8270D SIM	257942
160-17824-29	DUP-B 20160615-01	Total/NA	Solid	8270D SIM	257942
160-17824-31	SB-17 (6-8') 20160615-01	Total/NA	Solid	8270D SIM	257942
160-17824-32	SB-18 (6-8') 20160615-01	Total/NA	Solid	8270D SIM	257942
MB 160-257942/1-A	Method Blank	Total/NA	Solid	8270D SIM	257942
LCS 160-257942/2-A	Lab Control Sample	Total/NA	Solid	8270D SIM	257942
160-17824-20 MS	SB-22 (0-2') 20160614-01	Total/NA	Solid	8270D SIM	257942
160-17824-20 MSD	SB-22 (0-2') 20160614-01	Total/NA	Solid	8270D SIM	257942

## GC Semi VOA

### Prep Batch: 179817

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-13	SB-28 (0-2') 20160613-01	Total/NA	Solid	3541	
160-17824-17	SB-28 (17-20') 20160614-01	Total/NA	Solid	3541	
160-17824-18	SB-22 (16-20') 20160614-01	Total/NA	Solid	3541	
160-17824-19	DUP-A 20160614-01	Total/NA	Solid	3541	
160-17824-20	SB-22 (0-2') 20160614-01	Total/NA	Solid	3541	
MB 180-179817/1-A	Method Blank	Total/NA	Solid	3541	
LCS 180-179817/2-A	Lab Control Sample	Total/NA	Solid	3541	
160-17824-20 MS	SB-22 (0-2') 20160614-01	Total/NA	Solid	3541	
160-17824-20 MSD	SB-22 (0-2') 20160614-01	Total/NA	Solid	3541	

### Analysis Batch: 180499

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-13	SB-28 (0-2') 20160613-01	Total/NA	Solid	8082	179817
160-17824-17	SB-28 (17-20') 20160614-01	Total/NA	Solid	8082	179817
160-17824-18	SB-22 (16-20') 20160614-01	Total/NA	Solid	8082	179817
160-17824-19	DUP-A 20160614-01	Total/NA	Solid	8082	179817
160-17824-20	SB-22 (0-2') 20160614-01	Total/NA	Solid	8082	179817
MB 180-179817/1-A	Method Blank	Total/NA	Solid	8082	179817
LCS 180-179817/2-A	Lab Control Sample	Total/NA	Solid	8082	179817
160-17824-20 MS	SB-22 (0-2') 20160614-01	Total/NA	Solid	8082	179817
160-17824-20 MSD	SB-22 (0-2') 20160614-01	Total/NA	Solid	8082	179817

TestAmerica St. Louis



# QC Association Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Specialty Organics

### Prep Batch: 116529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-21	SB-28 (3-5') 20160613-01	Total/NA	Solid	8290	
MB 320-116529/1-A	Method Blank	Total/NA	Solid	8290	
LCS 320-116529/2-A	Lab Control Sample	Total/NA	Solid	8290	

### Analysis Batch: 117801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-21	SB-28 (3-5') 20160613-01	Total/NA	Solid	8290A	116529
MB 320-116529/1-A	Method Blank	Total/NA	Solid	8290A	116529
LCS 320-116529/2-A	Lab Control Sample	Total/NA	Solid	8290A	116529

### Prep Batch: 118093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-21 - RE	SB-28 (3-5') 20160613-01	Total/NA	Solid	8290	
160-17824-22	SB-35 (0-2') 20160615-01	Total/NA	Solid	8290	
160-17824-30	DUP-C 20160615-01	Total/NA	Solid	8290	
MB 320-118093/1-A	Method Blank	Total/NA	Solid	8290	
LCS 320-118093/2-A	Lab Control Sample	Total/NA	Solid	8290	

### Analysis Batch: 118604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-21 - RE	SB-28 (3-5') 20160613-01	Total/NA	Solid	8290A	118093
160-17824-22	SB-35 (0-2') 20160615-01	Total/NA	Solid	8290A	118093
160-17824-30	DUP-C 20160615-01	Total/NA	Solid	8290A	118093
MB 320-118093/1-A	Method Blank	Total/NA	Solid	8290A	118093
LCS 320-118093/2-A	Lab Control Sample	Total/NA	Solid	8290A	118093

## Metals

### Prep Batch: 258403

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-2	SB-19 (6-8') 20160615-01	Total/NA	Solid	3050B	
160-17824-3	SB-19 (0-2') 20160615-01	Total/NA	Solid	3050B	
160-17824-4	SB-24 (0-2') 20160615-01	Total/NA	Solid	3050B	
160-17824-5	SB-24 (12-16') 20160614-01	Total/NA	Solid	3050B	
160-17824-6	SB-25 (12-16') 20160614-01	Total/NA	Solid	3050B	
160-17824-7	SB-27 (18-22') 20160614-01	Total/NA	Solid	3050B	
160-17824-8	SB-27 (0-2') 20160614-01	Total/NA	Solid	3050B	
160-17824-9	SB-25 (0-2') 20160614-01	Total/NA	Solid	3050B	
160-17824-10	SB-19 (8-12') 20160615-01	Total/NA	Solid	3050B	
160-17824-12	SB-23 (12-16') 20160614-01	Total/NA	Solid	3050B	
160-17824-13	SB-28 (0-2') 20160613-01	Total/NA	Solid	3050B	
160-17824-14	SB-26 (12-16') 20160613-01	Total/NA	Solid	3050B	
160-17824-15	SB-23 (1-2') 20160614-01	Total/NA	Solid	3050B	
160-17824-16	SB-26 (0-2') 20160614-01	Total/NA	Solid	3050B	
160-17824-17	SB-28 (17-20') 20160614-01	Total/NA	Solid	3050B	
160-17824-18	SB-22 (16-20') 20160614-01	Total/NA	Solid	3050B	
160-17824-19	DUP-A 20160614-01	Total/NA	Solid	3050B	
160-17824-20	SB-22 (0-2') 20160614-01	Total/NA	Solid	3050B	
MB 160-258403/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 160-258403/2-A	Lab Control Sample	Total/NA	Solid	3050B	

TestAmerica St. Louis

# QC Association Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Metals (Continued)

### Prep Batch: 258403 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSSRM 160-258403/3-A	Lab Control Sample	Total/NA	Solid	3050B	
160-17824-20 MS	SB-22 (0-2') 20160614-01	Total/NA	Solid	3050B	
160-17824-20 MSD	SB-22 (0-2') 20160614-01	Total/NA	Solid	3050B	

### Prep Batch: 258404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-22	SB-35 (0-2') 20160615-01	Total/NA	Solid	3050B	
160-17824-23	SB-16 (0-2') 20160615-01	Total/NA	Solid	3050B	
160-17824-24	SB-16 (8-12') 20160615-01	Total/NA	Solid	3050B	
160-17824-25	SB-18 (0-2') 20160615-01	Total/NA	Solid	3050B	
160-17824-26	SB-17 (16-20') 20160615-01	Total/NA	Solid	3050B	
160-17824-27	SB-18 (16-20') 20160615-01	Total/NA	Solid	3050B	
160-17824-28	SB-17 (0-2') 20160615-01	Total/NA	Solid	3050B	
160-17824-29	DUP-B 20160615-01	Total/NA	Solid	3050B	
160-17824-31	SB-17 (6-8') 20160615-01	Total/NA	Solid	3050B	
160-17824-32	SB-18 (6-8') 20160615-01	Total/NA	Solid	3050B	
MB 160-258404/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 160-258404/2-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSSRM 160-258404/3-A	Lab Control Sample	Total/NA	Solid	3050B	
160-17824-28 MS	SB-17 (0-2') 20160615-01	Total/NA	Solid	3050B	
160-17824-28 MSD	SB-17 (0-2') 20160615-01	Total/NA	Solid	3050B	

### Analysis Batch: 259625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-2	SB-19 (6-8') 20160615-01	Total/NA	Solid	6020A	258403
160-17824-3	SB-19 (0-2') 20160615-01	Total/NA	Solid	6020A	258403
160-17824-4	SB-24 (0-2') 20160615-01	Total/NA	Solid	6020A	258403
160-17824-5	SB-24 (12-16') 20160614-01	Total/NA	Solid	6020A	258403
160-17824-6	SB-25 (12-16') 20160614-01	Total/NA	Solid	6020A	258403
160-17824-7	SB-27 (18-22') 20160614-01	Total/NA	Solid	6020A	258403
160-17824-8	SB-27 (0-2') 20160614-01	Total/NA	Solid	6020A	258403
160-17824-9	SB-25 (0-2') 20160614-01	Total/NA	Solid	6020A	258403
160-17824-10	SB-19 (8-12') 20160615-01	Total/NA	Solid	6020A	258403
160-17824-12	SB-23 (12-16') 20160614-01	Total/NA	Solid	6020A	258403
160-17824-13	SB-28 (0-2') 20160613-01	Total/NA	Solid	6020A	258403
160-17824-14	SB-26 (12-16') 20160613-01	Total/NA	Solid	6020A	258403
160-17824-15	SB-23 (1-2') 20160614-01	Total/NA	Solid	6020A	258403
160-17824-16	SB-26 (0-2') 20160614-01	Total/NA	Solid	6020A	258403
160-17824-17	SB-28 (17-20') 20160614-01	Total/NA	Solid	6020A	258403
160-17824-18	SB-22 (16-20') 20160614-01	Total/NA	Solid	6020A	258403
160-17824-19	DUP-A 20160614-01	Total/NA	Solid	6020A	258403
160-17824-20	SB-22 (0-2') 20160614-01	Total/NA	Solid	6020A	258403
MB 160-258403/1-A	Method Blank	Total/NA	Solid	6020A	258403
LCS 160-258403/2-A	Lab Control Sample	Total/NA	Solid	6020A	258403
LCSSRM 160-258403/3-A	Lab Control Sample	Total/NA	Solid	6020A	258403
160-17824-20 MS	SB-22 (0-2') 20160614-01	Total/NA	Solid	6020A	258403
160-17824-20 MSD	SB-22 (0-2') 20160614-01	Total/NA	Solid	6020A	258403

### Analysis Batch: 259626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-22	SB-35 (0-2') 20160615-01	Total/NA	Solid	6020A	258404

TestAmerica St. Louis

# QC Association Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Metals (Continued)

### Analysis Batch: 259626 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-23	SB-16 (0-2') 20160615-01	Total/NA	Solid	6020A	258404
160-17824-24	SB-16 (8-12') 20160615-01	Total/NA	Solid	6020A	258404
160-17824-25	SB-18 (0-2') 20160615-01	Total/NA	Solid	6020A	258404
160-17824-26	SB-17 (16-20') 20160615-01	Total/NA	Solid	6020A	258404
160-17824-27	SB-18 (16-20') 20160615-01	Total/NA	Solid	6020A	258404
160-17824-28	SB-17 (0-2') 20160615-01	Total/NA	Solid	6020A	258404
160-17824-29	DUP-B 20160615-01	Total/NA	Solid	6020A	258404
160-17824-31	SB-17 (6-8') 20160615-01	Total/NA	Solid	6020A	258404
160-17824-32	SB-18 (6-8') 20160615-01	Total/NA	Solid	6020A	258404
MB 160-258404/1-A	Method Blank	Total/NA	Solid	6020A	258404
LCS 160-258404/2-A	Lab Control Sample	Total/NA	Solid	6020A	258404
LCS SRM 160-258404/3-A	Lab Control Sample	Total/NA	Solid	6020A	258404
160-17824-28 MS	SB-17 (0-2') 20160615-01	Total/NA	Solid	6020A	258404
160-17824-28 MSD	SB-17 (0-2') 20160615-01	Total/NA	Solid	6020A	258404

## General Chemistry

### Analysis Batch: 116220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-21	SB-28 (3-5') 20160613-01	Total/NA	Solid	D 2216	
160-17824-30	DUP-C 20160615-01	Total/NA	Solid	D 2216	

### Analysis Batch: 257178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-1	SB-30 (1-3') 20160614-01	Total/NA	Solid	Moisture	
160-17824-2	SB-19 (6-8') 20160615-01	Total/NA	Solid	Moisture	
160-17824-3	SB-19 (0-2') 20160615-01	Total/NA	Solid	Moisture	
160-17824-4	SB-24 (0-2') 20160615-01	Total/NA	Solid	Moisture	
160-17824-5	SB-24 (12-16') 20160614-01	Total/NA	Solid	Moisture	
160-17824-6	SB-25 (12-16') 20160614-01	Total/NA	Solid	Moisture	
160-17824-7	SB-27 (18-22') 20160614-01	Total/NA	Solid	Moisture	
160-17824-8	SB-27 (0-2') 20160614-01	Total/NA	Solid	Moisture	
160-17824-9	SB-25 (0-2') 20160614-01	Total/NA	Solid	Moisture	
160-17824-10	SB-19 (8-12') 20160615-01	Total/NA	Solid	Moisture	
160-17824-12	SB-23 (12-16') 20160614-01	Total/NA	Solid	Moisture	
160-17824-13	SB-28 (0-2') 20160613-01	Total/NA	Solid	Moisture	
160-17824-14	SB-26 (12-16') 20160613-01	Total/NA	Solid	Moisture	
160-17824-15	SB-23 (1-2') 20160614-01	Total/NA	Solid	Moisture	
160-17824-16	SB-26 (0-2') 20160614-01	Total/NA	Solid	Moisture	
160-17824-17	SB-28 (17-20') 20160614-01	Total/NA	Solid	Moisture	
160-17824-18	SB-22 (16-20') 20160614-01	Total/NA	Solid	Moisture	
160-17824-19	DUP-A 20160614-01	Total/NA	Solid	Moisture	
160-17824-20	SB-22 (0-2') 20160614-01	Total/NA	Solid	Moisture	
160-17824-22	SB-35 (0-2') 20160615-01	Total/NA	Solid	Moisture	
160-17824-23	SB-16 (0-2') 20160615-01	Total/NA	Solid	Moisture	
160-17824-24	SB-16 (8-12') 20160615-01	Total/NA	Solid	Moisture	
160-17824-25	SB-18 (0-2') 20160615-01	Total/NA	Solid	Moisture	
160-17824-26	SB-17 (16-20') 20160615-01	Total/NA	Solid	Moisture	
160-17824-27	SB-18 (16-20') 20160615-01	Total/NA	Solid	Moisture	
160-17824-28	SB-17 (0-2') 20160615-01	Total/NA	Solid	Moisture	

TestAmerica St. Louis

# QC Association Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## General Chemistry (Continued)

### Analysis Batch: 257178 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-29	DUP-B 20160615-01	Total/NA	Solid	Moisture	
160-17824-31	SB-17 (6-8') 20160615-01	Total/NA	Solid	Moisture	
160-17824-32	SB-18 (6-8') 20160615-01	Total/NA	Solid	Moisture	
160-17824-22 DU	SB-35 (0-2') 20160615-01	Total/NA	Solid	Moisture	

## Rad

### Leach Batch: 256896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-3	SB-19 (0-2') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-4	SB-24 (0-2') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-5	SB-24 (12-16') 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-6	SB-25 (12-16') 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-7	SB-27 (18-22') 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-8	SB-27 (0-2') 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-9	SB-25 (0-2') 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-10	SB-19 (8-12') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-12	SB-23 (12-16') 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-13	SB-28 (0-2') 20160613-01	Total/NA	Solid	Dry and Grind	
160-17824-14	SB-26 (12-16') 20160613-01	Total/NA	Solid	Dry and Grind	
160-17824-15	SB-23 (1-2') 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-16	SB-26 (0-2') 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-17	SB-28 (17-20') 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-18	SB-22 (16-20') 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-19	DUP-A 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-20	SB-22 (0-2') 20160614-01	Total/NA	Solid	Dry and Grind	
160-17824-22	SB-35 (0-2') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-23	SB-16 (0-2') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-24	SB-16 (8-12') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-25	SB-18 (0-2') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-26	SB-17 (16-20') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-27	SB-18 (16-20') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-28	SB-17 (0-2') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-29	DUP-B 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-3 DU	SB-19 (0-2') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-24 DU	SB-16 (8-12') 20160615-01	Total/NA	Solid	Dry and Grind	
160-17824-25 DU	SB-18 (0-2') 20160615-01	Total/NA	Solid	Dry and Grind	

### Prep Batch: 257323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-3	SB-19 (0-2') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-4	SB-24 (0-2') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-5	SB-24 (12-16') 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-6	SB-25 (12-16') 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-7	SB-27 (18-22') 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-8	SB-27 (0-2') 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-9	SB-25 (0-2') 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-10	SB-19 (8-12') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-12	SB-23 (12-16') 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-13	SB-28 (0-2') 20160613-01	Total/NA	Solid	Fill_Geo-21	256896

TestAmerica St. Louis

# QC Association Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Rad (Continued)

### Prep Batch: 257323 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-14	SB-26 (12-16') 20160613-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-15	SB-23 (1-2') 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-16	SB-26 (0-2') 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-17	SB-28 (17-20') 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-18	SB-22 (16-20') 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-19	DUP-A 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-20	SB-22 (0-2') 20160614-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-22	SB-35 (0-2') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-23	SB-16 (0-2') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-24	SB-16 (8-12') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896
MB 160-257323/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-257323/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
160-17824-3 DU	SB-19 (0-2') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896

### Prep Batch: 257324

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-25	SB-18 (0-2') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-26	SB-17 (16-20') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-27	SB-18 (16-20') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-28	SB-17 (0-2') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896
160-17824-29	DUP-B 20160615-01	Total/NA	Solid	Fill_Geo-21	256896
MB 160-257324/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-257324/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
160-17824-25 DU	SB-18 (0-2') 20160615-01	Total/NA	Solid	Fill_Geo-21	256896

### Prep Batch: 259994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-3	SB-19 (0-2') 20160615-01	Total/NA	Solid	Thin_Layer	256896
160-17824-4	SB-24 (0-2') 20160615-01	Total/NA	Solid	Thin_Layer	256896
160-17824-5	SB-24 (12-16') 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-6	SB-25 (12-16') 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-7	SB-27 (18-22') 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-8	SB-27 (0-2') 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-9	SB-25 (0-2') 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-10	SB-19 (8-12') 20160615-01	Total/NA	Solid	Thin_Layer	256896
160-17824-12	SB-23 (12-16') 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-13	SB-28 (0-2') 20160613-01	Total/NA	Solid	Thin_Layer	256896
160-17824-14	SB-26 (12-16') 20160613-01	Total/NA	Solid	Thin_Layer	256896
160-17824-15	SB-23 (1-2') 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-16	SB-26 (0-2') 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-17	SB-28 (17-20') 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-18	SB-22 (16-20') 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-19	DUP-A 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-20	SB-22 (0-2') 20160614-01	Total/NA	Solid	Thin_Layer	256896
160-17824-22	SB-35 (0-2') 20160615-01	Total/NA	Solid	Thin_Layer	256896
160-17824-23	SB-16 (0-2') 20160615-01	Total/NA	Solid	Thin_Layer	256896
160-17824-24	SB-16 (8-12') 20160615-01	Total/NA	Solid	Thin_Layer	256896
MB 160-259994/1-A	Method Blank	Total/NA	Solid	Thin_Layer	
LCS 160-259994/2-A	Lab Control Sample	Total/NA	Solid	Thin_Layer	
160-17824-24 DU	SB-16 (8-12') 20160615-01	Total/NA	Solid	Thin_Layer	256896

TestAmerica St. Louis

# QC Association Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Rad (Continued)

### Prep Batch: 260133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17824-25	SB-18 (0-2') 20160615-01	Total/NA	Solid	Thin_Layer	256896
160-17824-26	SB-17 (16-20') 20160615-01	Total/NA	Solid	Thin_Layer	256896
160-17824-27	SB-18 (16-20') 20160615-01	Total/NA	Solid	Thin_Layer	256896
160-17824-28	SB-17 (0-2') 20160615-01	Total/NA	Solid	Thin_Layer	256896
160-17824-29	DUP-B 20160615-01	Total/NA	Solid	Thin_Layer	256896
MB 160-260133/1-A	Method Blank	Total/NA	Solid	Thin_Layer	
LCS 160-260133/2-A	Lab Control Sample	Total/NA	Solid	Thin_Layer	

# Surrogate Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		TOL (74-135)	DBFM (53-143)	BFB (59-150)	12DCE (67-132)
160-17824-1	SB-30 (1-3') 20160614-01	126	112	139 *	101
LCS 160-257296/2-A	Lab Control Sample	114	110	105	92
LCSD 160-257296/3-A	Lab Control Sample Dup	112	111	107	92
MB 160-257296/1-A	Method Blank	112	109	110	92

### Surrogate Legend

TOL = Toluene-d8 (Surr)  
DBFM = Dibromofluoromethane (Surr)  
BFB = 4-Bromofluorobenzene (Surr)  
12DCE = 1,2-Dichloroethane-d4 (Surr)

## Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		TOL (80-129)	DBFM (80-121)	BFB (71-139)	12DCE (76-121)
160-17824-11	VOC TRIP BLANK 20160615-01	108	102	105	96
LCS 160-258396/4	Lab Control Sample	113	101	101	95
LCSD 160-258396/5	Lab Control Sample Dup	110	101	102	95
MB 160-258396/7	Method Blank	109	96	103	91

### Surrogate Legend

TOL = Toluene-d8 (Surr)  
DBFM = Dibromofluoromethane (Surr)  
BFB = 4-Bromofluorobenzene (Surr)  
12DCE = 1,2-Dichloroethane-d4 (Surr)

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		FBP (59-110)	NBZ (44-120)	TPH (59-98)
160-17824-2	SB-19 (6-8') 20160615-01	85	76	90
160-17824-3	SB-19 (0-2') 20160615-01	91	83	116 X
160-17824-19	DUP-A 20160614-01	86	79	89
160-17824-23	SB-16 (0-2') 20160615-01	99	89	121 X
160-17824-24	SB-16 (8-12') 20160615-01	90	78	87
160-17824-25	SB-18 (0-2') 20160615-01	100	81	219 X *
160-17824-28	SB-17 (0-2') 20160615-01	81	74	82
160-17824-28 MS	SB-17 (0-2') 20160615-01	91	79	86
160-17824-28 MSD	SB-17 (0-2') 20160615-01	88	82	85
MB 160-257942/1-A	Method Blank	86	81	84

### Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)  
NBZ = Nitrobenzene-d5 (Surr)  
TPH = Terphenyl-d14 (Surr)

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# Surrogate Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Matrix: Solid

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		FBP (33-128)	NBZ (43-113)	TPH (28-125)
160-17824-18	SB-22 (16-20') 20160614-01	73	71	84
160-17824-20	SB-22 (0-2') 20160614-01	79	74	83
160-17824-20 MS	SB-22 (0-2') 20160614-01	72	74	77
160-17824-20 MSD	SB-22 (0-2') 20160614-01	78	69	71
160-17824-29	DUP-B 20160615-01	67	72	81
160-17824-31	SB-17 (6-8') 20160615-01	73	68	71
160-17824-32	SB-18 (6-8') 20160615-01	74	75	77
LCS 160-257942/2-A	Lab Control Sample	78	76	69
MB 160-257942/1-A	Method Blank	77	75	77

#### Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)

NBZ = Nitrobenzene-d5 (Surr)

TPH = Terphenyl-d14 (Surr)

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Solid

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		DCB1 (20-150)	DCB2 (20-150)
160-17824-13	SB-28 (0-2') 20160613-01	897 X	819 X
160-17824-17	SB-28 (17-20') 20160614-01	57	52
160-17824-18	SB-22 (16-20') 20160614-01	52	49
160-17824-19	DUP-A 20160614-01	200 X	91 p *
160-17824-20	SB-22 (0-2') 20160614-01	326 X	275 X
160-17824-20 MS	SB-22 (0-2') 20160614-01	205 X	155 X
160-17824-20 MSD	SB-22 (0-2') 20160614-01	218 X	145 p
LCS 180-179817/2-A	Lab Control Sample	67	58
MB 180-179817/1-A	Method Blank	63	56

#### Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)



# Isotope Dilution Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17824-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Solid

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (40-135)	TCDF (40-135)	PeCDD (40-135)	PeCDF1 (40-135)	HxCDD2 (40-135)	HxCDF1 (40-135)	HpCDD (40-135)	HpCDF1 (40-135)
160-17824-21	SB-28 (3-5') 20160613-01	87	98	85	96	93	95	89	96
160-17824-21 - RE	SB-28 (3-5') 20160613-01	76	81	74	78	82	75	76	80
160-17824-22	SB-35 (0-2') 20160615-01	72	76	69	74	80	72	76	80
160-17824-30	DUP-C 20160615-01	75	82	74	79	87	77	79	85
LCS 320-116529/2-A	Lab Control Sample	69	78	70	78	80	79	76	79
LCS 320-118093/2-A	Lab Control Sample	72	77	67	73	83	72	72	78
MB 320-116529/1-A	Method Blank	81	91	82	90	91	88	85	89
MB 320-118093/1-A	Method Blank	81	84	76	82	90	80	83	86

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OCDD (40-135)
160-17824-21	SB-28 (3-5') 20160613-01	82
160-17824-21 - RE	SB-28 (3-5') 20160613-01	76
160-17824-22	SB-35 (0-2') 20160615-01	75
160-17824-30	DUP-C 20160615-01	78
LCS 320-116529/2-A	Lab Control Sample	72
LCS 320-118093/2-A	Lab Control Sample	73
MB 320-116529/1-A	Method Blank	79
MB 320-118093/1-A	Method Blank	83

### Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- OCDD = 13C-OCDD

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis  
13715 Rider Trail North  
Earth City, MO 63045  
Tel: (314)298-8566

TestAmerica Job ID: 160-17845-1

Client Project/Site: Former Reid Hospital Site  
Revision: 1

For:

Environmental Resources Management Inc  
8425 Woodfield Crossing Blvd  
Suite 560-W  
Indianapolis, Indiana 46240

Attn: Mr. Aaron Friedrich

*Elizabeth M. Hoerchler*

Authorized for release by:  
9/16/2016 3:49:22 PM

Elizabeth Hoerchler, Project Mgmt. Assistant  
(314)298-8566  
[elizabeth.hoerchler@testamericainc.com](mailto:elizabeth.hoerchler@testamericainc.com)

### LINKS

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

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

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# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

**Job ID: 160-17845-1**

**Laboratory: TestAmerica St. Louis**

**Narrative**

## CASE NARRATIVE

**Client: Environmental Resources Management Inc**

**Project: Former Reid Hospital Site**

**Report Number: 160-17845-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

### **RECEIPT**

The samples were received on 06/17/2016; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.7° C and 1.5° C.

### **POLYCHLORINATED BIPHENYLS (PCBS)**

Samples RB-1 (160-17845-1), RB-2 (160-17845-2), EB-1 (160-17845-3) and EB-2 (160-17845-4) were analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA SW-846 Method 8082. The samples were prepared on 06/21/2016 and analyzed on 06/22/2016.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with analytical batch 180-179799.

The laboratory control sample (LCS) for batch 180-179799 recovered outside control limits for the following analytes: 1016/1260. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Job ID: 160-17845-1 (Continued)

### Laboratory: TestAmerica St. Louis (Continued)

#### **SEMIVOLATILE ORGANIC COMPOUNDS-SIM**

Samples RB-1 (160-17845-1), RB-2 (160-17845-2), EB-1 (160-17845-3) and EB-2 (160-17845-4) were analyzed for Semivolatile Organic Compounds-SIM in accordance with EPA SW-846 Method 8270D\_SIM. The samples were prepared on 06/21/2016 and analyzed on 07/05/2016.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 160-257275. An LCS/LCSD were performed instead.

2-Methylnaphthalene and 1-Methylnaphthalene recovered outside advisory limits of 70-130 in the LCS but within limits in the LCSD associated with batch 160-259211. Until there are enough data points to generate in-house limits, the data will be reported with a narrative. (LCS 160-257275/2-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **METALS (ICPMS)**

Samples RB-1 (160-17845-1), RB-2 (160-17845-2), EB-1 (160-17845-3) and EB-2 (160-17845-4) were analyzed for Metals (ICPMS) in accordance with EPA SW-846 Methods 6020A. The samples were prepared on 06/30/2016 and analyzed on 07/13/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **GROSS ALPHA AND GROSS BETA RADIOACTIVITY**

Samples RB-1 (160-17845-1), RB-2 (160-17845-2), EB-1 (160-17845-3) and EB-2 (160-17845-4) were analyzed for Gross Alpha and Gross Beta Radioactivity in accordance with USEPA Method 900.0. The samples were prepared on 06/24/2016 and analyzed on 06/27/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **CESIUM 137 AND OTHER GAMMA EMITTERS (GS)**

Samples RB-1 (160-17845-1), RB-2 (160-17845-2), EB-1 (160-17845-3) and EB-2 (160-17845-4) were analyzed for Cesium 137 and Other Gamma Emitters (GS) in accordance with USEPA Method 901.1. The samples were prepared on 06/20/2016 and analyzed on 06/20/2016 and 06/21/2016.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **DIOXINS AND FURANS (HRGC/HRMS)**

Samples RB-1 (160-17845-1), RB-2 (160-17845-2), EB-1 (160-17845-3) and EB-2 (160-17845-4) were analyzed for Dioxins and Furans (HRGC/HRMS) in accordance with SW846 8290A. The samples were prepared on 06/22/2016 and analyzed on 07/25/2016.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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160-17845 Waybill

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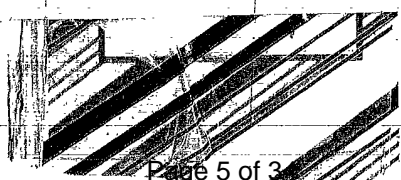
PITTSBURGH PA 15238  
 (412) 968-7068  
 REF: 5160-4277

TO SHIPPING/RECEIVING  
 TESTAMERICA LABORATORIES, INC.  
 301 ALPHA DRIVE

862E/18067208ES

ORIGIN ID: ALNA (314) 298-8566  
 BRIAN DANIELS  
 TEST AMERICA  
 13715 RIDER TRAIL NORTH  
 EARTH CITY, MO 63045  
 UNITED STATES US  
 SHIP DATE: 20JUN16  
 ACTWGT: 36.2 LB  
 CND: 486221/CAFE2912  
 BILL RECIPIENT

Part # 159469-434 RTT2 EXP 03/17



**TestAmerica St. Louis**  
 13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

# Chain of Custody Record



**estAmerica**  
 THE LEADER IN ENVIRONMENTAL TESTING

160-17845 Chain of Custody

<b>Client Information (Sub Contract Lab)</b>	Sampler:	Lab PM:	Hoerchler, Elizabeth M
Client Contact:	Phone:	E-Mail:	elizabeth.hoerchler@testamericainc.com
Shipping/Receiving			

C No: J-87295.1  
 Page: Page 1 of 1  
 Job #: 160-17845-1

Company: TestAmerica Laboratories, Inc.  
 Address: 301 Alpha Drive, RIDC Park, Pittsburgh PA, 15238  
 Phone: 412-963-7058(Tel) 412-963-2468(Fax)  
 Project Name: Former Reid Hospital Site  
 Site:

**Analysis Requested**

Due Date Requested: 7/12/2016  
 TAT Requested (days):  
 PO #:  
 WO #:  
 Project #: 16005365  
 SSOW#:

**Preservation Codes:**

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	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/MSB (Yes or No)	8082_LL/3510C_LL Standard List	Total Number of Containers	Special Instructions/Note:
RB-1 (160-17845-1)	6/16/16	17:30 Central		Water			X		
RB-2 (160-17845-2)	6/16/16	17:45 Central		Water			X		
EB-1 (160-17845-3)	6/16/16	17:00 Central		Water			X		
EB-2 (160-17845-4)	6/16/16	17:15 Central		Water			X		

**Possible Hazard Identification**  
 Level 1 radioactive  
 Deliverable Requested: I, II, III, IV, Other (specify)

**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:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: <i>Jeff Clarke</i>	Date/Time: 6-20-16 1700	Company: TASTR	Received by: <i>WJZ</i>
Relinquished by:	Date/Time:	Company:	Received by:
Relinquished by:	Date/Time:	Company:	Received by:

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

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**TestAmerica St. Louis**

13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

**Chain of Custody Record**



**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information (Sub Contract Lab)</b>				Sampler:		Lab PM:		Carrier Tracking No(s):		COC No:	
Client Contact: Shipping/Receiving				Phone:		Hoerchler, Elizabeth M				160-87296.1	
Company: TestAmerica Laboratories, Inc.				Analysis Requested				Page: Page 1 of 1			
Address: 880 Riverside Parkway, City: West Sacramento State, Zip: CA, 95605 Phone: 916-373-5600(Tel) 916-372-1059(Fax) Email:				Due Date Requested: 7/12/2016		TAT Requested (days):		Job #: 160-17845-1		Preservation Codes: A - HCL                  M - Hexane B - NaOH                N - None C - Zn Acetate        O - AsNaO2 D - Nitric Acid        P - Na2O4S E - NaHSO4            Q - Na2SO3 F - MeOH               R - Na2S2O3 G - Amchlor          S - H2SO4 H - Ascorbic Acid    T - TSP Dodecahydrate I - Ice                    U - Acetone J - DI Water          V - MCAA K - EDTA              W - ph 4-5 L - EDA                Z - other (specify)	
Project Name: Former Reid Hospital Site Site:				Project #: 16005365		SSOW#:		Other:			
				Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		8290A18290_P_Sep 17 Isomers List		Total Number of Containers	
<b>Sample Identification - Client ID (Lab ID)</b>				<b>Sample Date</b>		<b>Sample Time</b>		<b>Sample Type (C=comp, G=grab)</b>		<b>Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)</b>	
										Special Instructions/Note:	
RB-1 (160-17845-1)				6/16/16		17:30 Central		Water		X	
RB-2 (160-17845-2)				6/16/16		17:45 Central		Water		X	
EB-1 (160-17845-3)				6/16/16		17:00 Central		Water		X	
EB-2 (160-17845-4)				6/16/16		17:15 Central		Water		X	
<b>Possible Hazard Identification</b>				<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b>							
Level 1 radioactive				<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>Shi Clark</i>		Date/Time: <i>6.20.16 1700</i>		Company: <i>TASTR</i>		Received by: <i>Core T. E.</i>		Date/Time: <i>6/21/16 0930</i>		Company: <i>TASTR</i>	
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: <i>2.9</i>							

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**TestAmerica St. Louis**  
 13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

# Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b> Client Contact: Shipping/Receiving Company: TestAmerica Laboratories, Inc. Address: 880 Riverside Parkway, City: West Sacramento State, Zip: CA, 95605 Phone: 916-373-5600(Tel) 916-372-1059(Fax) Email: Project Name: Former Reid Hospital Site Site:				Sampler: Phone: Lab PM: Hoerchler, Elizabeth M E-Mail: elizabeth.hoerchler@testamericainc.com		Carrier Tracking No(s): COC No: 160-87296.1 Page: Page 1 of 1 Job #: 160-17845-1											
Due Date Requested: 7/12/2016 TAT Requested (days): PO #: WO #: Project #: 16005365 SSOW#:				<b>Analysis Requested</b>							<b>Preservation Codes:</b> A - HCL            M - Hexane B - NaOH        N - None C - Zn Acetate    O - AsNaO2 D - Nitric Acid    P - Na2O4S E - NaHSO4        Q - Na2SO3 F - MeOH          R - Na2S2O3 G - Amchlor       S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice             U - Acetone J - DI Water       V - MCAA K - EDTA          W - ph 4-5 L - EDA            Z - other (specify)						
<b>Sample Identification - Client ID (Lab ID)</b>				Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8290A/8290_P_Sep 17 Isomers List							Total Number of containers	<b>Special Instructions/Note:</b>			
<b>Sample Date</b>			<b>Sample Time</b>														
<b>Sample Identification - Client ID (Lab ID)</b>				<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type (C=Comp, G=grab)</b>	<b>Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)</b>	<b>Field Filtered Sample (Yes or No)</b>	<b>Perform MS/MSD (Yes or No)</b>	<b>8290A/8290_P_Sep 17 Isomers List</b>	<b>Total Number of containers</b>	<b>Special Instructions/Note:</b>					
RB-1 (160-17845-1)				6/16/16	17:30 Central	Water		X					1				
RB-2 (160-17845-2)				6/16/16	17:45 Central	Water		X					1				
EB-1 (160-17845-3)				6/16/16	17:00 Central	Water		X					1				
EB-2 (160-17845-4)				6/16/16	17:15 Central	Water		X					1				
<b>Possible Hazard Identification</b>				<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>													
Level 1 radioactive				<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>Sh Clark</i>				Date/Time: 6.20.16 1700		Company: TA SR		Received by: <i>W R.E.K.</i>				Date/Time: 6/21/16 0930		Company: <i>TRWS</i>			
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: 29									

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# Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 160-17845-1

**Login Number: 17845**  
**List Number: 1**  
**Creator: Daniels, Brian J**

**List Source: TestAmerica St. Louis**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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 (excluding tests with immediate HTs)	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	



## Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 160-17845-1

**Login Number: 17845**  
**List Number: 2**  
**Creator: Davis, Ellen G**

**List Source: TestAmerica Pittsburgh**  
**List Creation: 06/21/16 11:42 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
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 (excluding tests with immediate HTs)	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 160-17845-1

**Login Number: 17845**  
**List Number: 3**  
**Creator: Shockley, Wesley S**

**List Source: TestAmerica Sacramento**  
**List Creation: 06/22/16 01:43 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Definitions/Glossary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### GC Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.

### Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

## Glossary

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

# Method Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

Method	Method Description	Protocol	Laboratory
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SL
8082	Polychlorinated Biphenyls (PCBs) (GC)	SW846	TAL PIT
8290A	Dioxins and Furans (HRGC/HRMS)	SW846	TAL SAC
6020A	Metals (ICP/MS)	SW846	TAL SL
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
Local Method	General Sub Contract Method	NONE	TAL RCH

#### Protocol References:

EPA = US Environmental Protection Agency

NONE = NONE

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

#### Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Sample Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-17845-1	RB-1 20160616-01	Water	06/16/16 17:30	06/17/16 10:50
160-17845-2	RB-2 20160616-01	Water	06/16/16 17:45	06/17/16 10:50
160-17845-3	EB-1 20160616-01	Water	06/16/16 17:00	06/17/16 10:50
160-17845-4	EB-2 20160616-01	Water	06/16/16 17:15	06/17/16 10:50

1

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# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

**Client Sample ID: RB-1 20160616-01**

**Lab Sample ID: 160-17845-1**

**Date Collected: 06/16/16 17:30**

**Matrix: Water**

**Date Received: 06/17/16 10:50**

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND	*	0.19	0.048	ug/L		06/21/16 10:05	07/05/16 22:12	1
2-Methylnaphthalene	ND	*	0.19	0.029	ug/L		06/21/16 10:05	07/05/16 22:12	1
Acenaphthene	ND		0.19	0.033	ug/L		06/21/16 10:05	07/05/16 22:12	1
Acenaphthylene	ND		0.19	0.036	ug/L		06/21/16 10:05	07/05/16 22:12	1
Anthracene	ND		0.19	0.037	ug/L		06/21/16 10:05	07/05/16 22:12	1
Benzo[a]anthracene	ND		0.19	0.030	ug/L		06/21/16 10:05	07/05/16 22:12	1
Benzo[a]pyrene	ND		0.19	0.051	ug/L		06/21/16 10:05	07/05/16 22:12	1
Benzo[b]fluoranthene	ND		0.19	0.052	ug/L		06/21/16 10:05	07/05/16 22:12	1
Benzo[g,h,i]perylene	ND		0.19	0.038	ug/L		06/21/16 10:05	07/05/16 22:12	1
Benzo[k]fluoranthene	ND		0.19	0.070	ug/L		06/21/16 10:05	07/05/16 22:12	1
Chrysene	ND		0.19	0.037	ug/L		06/21/16 10:05	07/05/16 22:12	1
Dibenz(a,h)anthracene	ND		0.19	0.044	ug/L		06/21/16 10:05	07/05/16 22:12	1
Fluoranthene	ND		0.19	0.032	ug/L		06/21/16 10:05	07/05/16 22:12	1
Fluorene	ND		0.19	0.031	ug/L		06/21/16 10:05	07/05/16 22:12	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.038	ug/L		06/21/16 10:05	07/05/16 22:12	1
Naphthalene	ND		0.19	0.065	ug/L		06/21/16 10:05	07/05/16 22:12	1
<b>Phenanthrene</b>	<b>0.096</b>	<b>J B</b>	0.19	0.062	ug/L		06/21/16 10:05	07/05/16 22:12	1
Pyrene	ND		0.19	0.035	ug/L		06/21/16 10:05	07/05/16 22:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	76		10 - 104	06/21/16 10:05	07/05/16 22:12	1
Nitrobenzene-d5 (Surr)	82		21 - 110	06/21/16 10:05	07/05/16 22:12	1
Terphenyl-d14 (Surr)	95		22 - 103	06/21/16 10:05	07/05/16 22:12	1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND	*	0.0095	0.0035	ug/L		06/21/16 16:00	06/22/16 15:03	1
PCB-1221	ND		0.0095	0.0056	ug/L		06/21/16 16:00	06/22/16 15:03	1
PCB-1232	ND		0.0095	0.0057	ug/L		06/21/16 16:00	06/22/16 15:03	1
PCB-1242	ND		0.0095	0.0032	ug/L		06/21/16 16:00	06/22/16 15:03	1
PCB-1248	ND		0.0095	0.0030	ug/L		06/21/16 16:00	06/22/16 15:03	1
PCB-1254	ND		0.0095	0.0042	ug/L		06/21/16 16:00	06/22/16 15:03	1
PCB-1260	ND	*	0.0095	0.0027	ug/L		06/21/16 16:00	06/22/16 15:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	102		16 - 150	06/21/16 16:00	06/22/16 15:03	1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.5	0.27	pg/L		06/22/16 16:19	07/25/16 19:07	1
2,3,7,8-TCDF	ND		9.5	0.22	pg/L		06/22/16 16:19	07/25/16 19:07	1
1,2,3,7,8-PeCDD	ND		48	0.33	pg/L		06/22/16 16:19	07/25/16 19:07	1
1,2,3,7,8-PeCDF	ND		48	0.29	pg/L		06/22/16 16:19	07/25/16 19:07	1
2,3,4,7,8-PeCDF	ND		48	0.30	pg/L		06/22/16 16:19	07/25/16 19:07	1
<b>1,2,3,4,7,8-HxCDD</b>	<b>0.55</b>	<b>J</b>	48	0.25	pg/L		06/22/16 16:19	07/25/16 19:07	1
<b>1,2,3,6,7,8-HxCDD</b>	<b>0.48</b>	<b>J q B</b>	48	0.24	pg/L		06/22/16 16:19	07/25/16 19:07	1
1,2,3,7,8,9-HxCDD	ND		48	0.21	pg/L		06/22/16 16:19	07/25/16 19:07	1
<b>1,2,3,4,7,8-HxCDF</b>	<b>0.70</b>	<b>J</b>	48	0.20	pg/L		06/22/16 16:19	07/25/16 19:07	1
<b>1,2,3,6,7,8-HxCDF</b>	<b>0.89</b>	<b>J</b>	48	0.19	pg/L		06/22/16 16:19	07/25/16 19:07	1
1,2,3,7,8,9-HxCDF	ND		48	0.21	pg/L		06/22/16 16:19	07/25/16 19:07	1

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

**Client Sample ID: RB-1 20160616-01**

**Lab Sample ID: 160-17845-1**

Date Collected: 06/16/16 17:30

Matrix: Water

Date Received: 06/17/16 10:50

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,6,7,8-HxCDF	0.64	J	48	0.20	pg/L		06/22/16 16:19	07/25/16 19:07	1
1,2,3,4,6,7,8-HpCDD	1.6	J B	48	0.25	pg/L		06/22/16 16:19	07/25/16 19:07	1
1,2,3,4,6,7,8-HpCDF	1.3	J B	48	0.22	pg/L		06/22/16 16:19	07/25/16 19:07	1
1,2,3,4,7,8,9-HpCDF	0.78	J q B	48	0.28	pg/L		06/22/16 16:19	07/25/16 19:07	1
OCDD	7.9	J B	95	0.36	pg/L		06/22/16 16:19	07/25/16 19:07	1
OCDF	4.9	J B	95	0.27	pg/L		06/22/16 16:19	07/25/16 19:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	81		40 - 135				06/22/16 16:19	07/25/16 19:07	1
13C-2,3,7,8-TCDF	76		40 - 135				06/22/16 16:19	07/25/16 19:07	1
13C-1,2,3,7,8-PeCDD	83		40 - 135				06/22/16 16:19	07/25/16 19:07	1
13C-1,2,3,7,8-PeCDF	80		40 - 135				06/22/16 16:19	07/25/16 19:07	1
13C-1,2,3,6,7,8-HxCDD	87		40 - 135				06/22/16 16:19	07/25/16 19:07	1
13C-1,2,3,4,7,8-HxCDF	82		40 - 135				06/22/16 16:19	07/25/16 19:07	1
13C-1,2,3,4,6,7,8-HpCDD	97		40 - 135				06/22/16 16:19	07/25/16 19:07	1
13C-1,2,3,4,6,7,8-HpCDF	89		40 - 135				06/22/16 16:19	07/25/16 19:07	1
13C-OCDD	105		40 - 135				06/22/16 16:19	07/25/16 19:07	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	1.2	ug/L		06/30/16 10:17	07/13/16 07:43	2
Chromium	ND		10	1.0	ug/L		06/30/16 10:17	07/13/16 07:43	2
Thallium	ND		2.0	0.55	ug/L		06/30/16 10:17	07/13/16 07:43	2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.0741	U	0.515	0.515	3.00	0.981	pCi/L	06/24/16 10:51	06/27/16 19:12	1
Gross Beta	-0.185	U	0.557	0.557	4.00	1.02	pCi/L	06/24/16 10:51	06/27/16 19:12	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	2.76	U	15.3	15.3		25.7	pCi/L	06/20/16 09:22	06/21/16 22:18	1
Cesium-137	-2.45	U	6.82	6.82	20.0	11.6	pCi/L	06/20/16 09:22	06/21/16 22:18	1
Cobalt-60	2.77	U	4.75	4.76		6.99	pCi/L	06/20/16 09:22	06/21/16 22:18	1
Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide	None						pCi/L	06/20/16 09:22	06/21/16 22:18	1

**Client Sample ID: RB-2 20160616-01**

**Lab Sample ID: 160-17845-2**

Date Collected: 06/16/16 17:45

Matrix: Water

Date Received: 06/17/16 10:50

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND	*	0.19	0.047	ug/L		06/21/16 10:05	07/05/16 22:46	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

**Client Sample ID: RB-2 20160616-01**

**Lab Sample ID: 160-17845-2**

**Date Collected: 06/16/16 17:45**

**Matrix: Water**

**Date Received: 06/17/16 10:50**

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND	*	0.19	0.028	ug/L		06/21/16 10:05	07/05/16 22:46	1
Acenaphthene	ND		0.19	0.033	ug/L		06/21/16 10:05	07/05/16 22:46	1
Acenaphthylene	ND		0.19	0.036	ug/L		06/21/16 10:05	07/05/16 22:46	1
Anthracene	ND		0.19	0.037	ug/L		06/21/16 10:05	07/05/16 22:46	1
Benzo[a]anthracene	ND		0.19	0.029	ug/L		06/21/16 10:05	07/05/16 22:46	1
Benzo[a]pyrene	ND		0.19	0.050	ug/L		06/21/16 10:05	07/05/16 22:46	1
Benzo[b]fluoranthene	ND		0.19	0.052	ug/L		06/21/16 10:05	07/05/16 22:46	1
Benzo[g,h,i]perylene	ND		0.19	0.038	ug/L		06/21/16 10:05	07/05/16 22:46	1
Benzo[k]fluoranthene	ND		0.19	0.069	ug/L		06/21/16 10:05	07/05/16 22:46	1
Chrysene	ND		0.19	0.037	ug/L		06/21/16 10:05	07/05/16 22:46	1
Dibenz(a,h)anthracene	ND		0.19	0.044	ug/L		06/21/16 10:05	07/05/16 22:46	1
Fluoranthene	ND		0.19	0.032	ug/L		06/21/16 10:05	07/05/16 22:46	1
Fluorene	ND		0.19	0.030	ug/L		06/21/16 10:05	07/05/16 22:46	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.038	ug/L		06/21/16 10:05	07/05/16 22:46	1
Naphthalene	ND		0.19	0.065	ug/L		06/21/16 10:05	07/05/16 22:46	1
<b>Phenanthrene</b>	<b>0.092</b>	<b>J B</b>	0.19	0.062	ug/L		06/21/16 10:05	07/05/16 22:46	1
Pyrene	ND		0.19	0.035	ug/L		06/21/16 10:05	07/05/16 22:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	61		10 - 104	06/21/16 10:05	07/05/16 22:46	1
Nitrobenzene-d5 (Surr)	67		21 - 110	06/21/16 10:05	07/05/16 22:46	1
Terphenyl-d14 (Surr)	72		22 - 103	06/21/16 10:05	07/05/16 22:46	1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND	*	0.0095	0.0035	ug/L		06/21/16 16:00	06/22/16 15:21	1
PCB-1221	ND		0.0095	0.0056	ug/L		06/21/16 16:00	06/22/16 15:21	1
PCB-1232	ND		0.0095	0.0057	ug/L		06/21/16 16:00	06/22/16 15:21	1
PCB-1242	ND		0.0095	0.0032	ug/L		06/21/16 16:00	06/22/16 15:21	1
PCB-1248	ND		0.0095	0.0030	ug/L		06/21/16 16:00	06/22/16 15:21	1
PCB-1254	ND		0.0095	0.0042	ug/L		06/21/16 16:00	06/22/16 15:21	1
PCB-1260	ND	*	0.0095	0.0027	ug/L		06/21/16 16:00	06/22/16 15:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	106		16 - 150	06/21/16 16:00	06/22/16 15:21	1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.5	0.28	pg/L		06/22/16 16:19	07/25/16 19:53	1
2,3,7,8-TCDF	ND		9.5	0.18	pg/L		06/22/16 16:19	07/25/16 19:53	1
1,2,3,7,8-PeCDD	ND		48	0.35	pg/L		06/22/16 16:19	07/25/16 19:53	1
1,2,3,7,8-PeCDF	ND		48	0.27	pg/L		06/22/16 16:19	07/25/16 19:53	1
2,3,4,7,8-PeCDF	ND		48	0.27	pg/L		06/22/16 16:19	07/25/16 19:53	1
1,2,3,4,7,8-HxCDD	ND		48	0.24	pg/L		06/22/16 16:19	07/25/16 19:53	1
<b>1,2,3,6,7,8-HxCDD</b>	<b>0.40</b>	<b>J q B</b>	48	0.23	pg/L		06/22/16 16:19	07/25/16 19:53	1
<b>1,2,3,7,8,9-HxCDD</b>	<b>0.38</b>	<b>J</b>	48	0.20	pg/L		06/22/16 16:19	07/25/16 19:53	1
1,2,3,4,7,8-HxCDF	ND		48	0.32	pg/L		06/22/16 16:19	07/25/16 19:53	1
1,2,3,6,7,8-HxCDF	ND		48	0.29	pg/L		06/22/16 16:19	07/25/16 19:53	1
1,2,3,7,8,9-HxCDF	ND		48	0.32	pg/L		06/22/16 16:19	07/25/16 19:53	1
2,3,4,6,7,8-HxCDF	ND		48	0.31	pg/L		06/22/16 16:19	07/25/16 19:53	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

**Client Sample ID: RB-2 20160616-01**

**Lab Sample ID: 160-17845-2**

Date Collected: 06/16/16 17:45

Matrix: Water

Date Received: 06/17/16 10:50

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.7	J B	48	0.24	pg/L		06/22/16 16:19	07/25/16 19:53	1
1,2,3,4,6,7,8-HpCDF	0.86	J B	48	0.30	pg/L		06/22/16 16:19	07/25/16 19:53	1
1,2,3,4,7,8,9-HpCDF	ND		48	0.38	pg/L		06/22/16 16:19	07/25/16 19:53	1
OCDD	10	J B	95	0.38	pg/L		06/22/16 16:19	07/25/16 19:53	1
OCDF	2.0	J B	95	0.29	pg/L		06/22/16 16:19	07/25/16 19:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	78		40 - 135				06/22/16 16:19	07/25/16 19:53	1
13C-2,3,7,8-TCDF	73		40 - 135				06/22/16 16:19	07/25/16 19:53	1
13C-1,2,3,7,8-PeCDD	80		40 - 135				06/22/16 16:19	07/25/16 19:53	1
13C-1,2,3,7,8-PeCDF	75		40 - 135				06/22/16 16:19	07/25/16 19:53	1
13C-1,2,3,6,7,8-HxCDD	80		40 - 135				06/22/16 16:19	07/25/16 19:53	1
13C-1,2,3,4,7,8-HxCDF	77		40 - 135				06/22/16 16:19	07/25/16 19:53	1
13C-1,2,3,4,6,7,8-HpCDD	91		40 - 135				06/22/16 16:19	07/25/16 19:53	1
13C-1,2,3,4,6,7,8-HpCDF	83		40 - 135				06/22/16 16:19	07/25/16 19:53	1
13C-OCDD	100		40 - 135				06/22/16 16:19	07/25/16 19:53	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	1.2	ug/L		06/30/16 10:17	07/13/16 08:30	2
Chromium	ND		10	1.0	ug/L		06/30/16 10:17	07/13/16 08:30	2
Thallium	ND		2.0	0.55	ug/L		06/30/16 10:17	07/13/16 08:30	2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	0.608	U	0.584	0.588	3.00	0.915	pCi/L	06/24/16 10:51	06/27/16 19:12	1
Gross Beta	-0.478	U	0.487	0.489	4.00	0.938	pCi/L	06/24/16 10:51	06/27/16 19:12	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	4.35	U	9.81	9.82		13.2	pCi/L	06/20/16 09:22	06/21/16 08:28	1
Cesium-137	2.14	U	7.61	7.61	20.0	13.0	pCi/L	06/20/16 09:22	06/21/16 08:28	1
Cobalt-60	-4.13	U	12.2	12.2		14.3	pCi/L	06/20/16 09:22	06/21/16 08:28	1
Other Detected Radionuclides	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Ac-228	35.1		17.1	17.4		16.2	pCi/L	06/20/16 09:22	06/21/16 08:28	1
Bi-214	52.7		16.4	17.2		12.9	pCi/L	06/20/16 09:22	06/21/16 08:28	1
Pb-214	40.4		13.6	14.3		14.2	pCi/L	06/20/16 09:22	06/21/16 08:28	1

**Client Sample ID: EB-1 20160616-01**

**Lab Sample ID: 160-17845-3**

Date Collected: 06/16/16 17:00

Matrix: Water

Date Received: 06/17/16 10:50

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND	*	0.19	0.047	ug/L		06/21/16 10:05	07/05/16 23:20	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

**Client Sample ID: EB-1 20160616-01**

**Lab Sample ID: 160-17845-3**

**Date Collected: 06/16/16 17:00**

**Matrix: Water**

**Date Received: 06/17/16 10:50**

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND	*	0.19	0.028	ug/L		06/21/16 10:05	07/05/16 23:20	1
Acenaphthene	ND		0.19	0.033	ug/L		06/21/16 10:05	07/05/16 23:20	1
Acenaphthylene	ND		0.19	0.036	ug/L		06/21/16 10:05	07/05/16 23:20	1
Anthracene	ND		0.19	0.037	ug/L		06/21/16 10:05	07/05/16 23:20	1
Benzo[a]anthracene	ND		0.19	0.029	ug/L		06/21/16 10:05	07/05/16 23:20	1
Benzo[a]pyrene	ND		0.19	0.050	ug/L		06/21/16 10:05	07/05/16 23:20	1
Benzo[b]fluoranthene	ND		0.19	0.052	ug/L		06/21/16 10:05	07/05/16 23:20	1
Benzo[g,h,i]perylene	ND		0.19	0.038	ug/L		06/21/16 10:05	07/05/16 23:20	1
Benzo[k]fluoranthene	ND		0.19	0.069	ug/L		06/21/16 10:05	07/05/16 23:20	1
Chrysene	ND		0.19	0.037	ug/L		06/21/16 10:05	07/05/16 23:20	1
Dibenz(a,h)anthracene	ND		0.19	0.044	ug/L		06/21/16 10:05	07/05/16 23:20	1
Fluoranthene	ND		0.19	0.032	ug/L		06/21/16 10:05	07/05/16 23:20	1
Fluorene	ND		0.19	0.030	ug/L		06/21/16 10:05	07/05/16 23:20	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.038	ug/L		06/21/16 10:05	07/05/16 23:20	1
Naphthalene	ND		0.19	0.064	ug/L		06/21/16 10:05	07/05/16 23:20	1
<b>Phenanthrene</b>	<b>0.11</b>	<b>J B</b>	0.19	0.062	ug/L		06/21/16 10:05	07/05/16 23:20	1
Pyrene	ND		0.19	0.035	ug/L		06/21/16 10:05	07/05/16 23:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	77		10 - 104	06/21/16 10:05	07/05/16 23:20	1
Nitrobenzene-d5 (Surr)	84		21 - 110	06/21/16 10:05	07/05/16 23:20	1
Terphenyl-d14 (Surr)	87		22 - 103	06/21/16 10:05	07/05/16 23:20	1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND	*	0.0095	0.0035	ug/L		06/21/16 14:30	06/22/16 14:25	1
PCB-1221	ND		0.0095	0.0056	ug/L		06/21/16 14:30	06/22/16 14:25	1
PCB-1232	ND		0.0095	0.0057	ug/L		06/21/16 14:30	06/22/16 14:25	1
PCB-1242	ND		0.0095	0.0032	ug/L		06/21/16 14:30	06/22/16 14:25	1
PCB-1248	ND		0.0095	0.0030	ug/L		06/21/16 14:30	06/22/16 14:25	1
PCB-1254	ND		0.0095	0.0042	ug/L		06/21/16 14:30	06/22/16 14:25	1
PCB-1260	ND	*	0.0095	0.0027	ug/L		06/21/16 14:30	06/22/16 14:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	96		16 - 150	06/21/16 14:30	06/22/16 14:25	1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.5	0.25	pg/L		06/22/16 16:19	07/25/16 20:39	1
2,3,7,8-TCDF	ND		9.5	0.18	pg/L		06/22/16 16:19	07/25/16 20:39	1
1,2,3,7,8-PeCDD	ND		47	0.32	pg/L		06/22/16 16:19	07/25/16 20:39	1
1,2,3,7,8-PeCDF	ND		47	0.20	pg/L		06/22/16 16:19	07/25/16 20:39	1
2,3,4,7,8-PeCDF	ND		47	0.21	pg/L		06/22/16 16:19	07/25/16 20:39	1
1,2,3,4,7,8-HxCDD	ND		47	0.22	pg/L		06/22/16 16:19	07/25/16 20:39	1
1,2,3,6,7,8-HxCDD	ND		47	0.22	pg/L		06/22/16 16:19	07/25/16 20:39	1
1,2,3,7,8,9-HxCDD	ND		47	0.19	pg/L		06/22/16 16:19	07/25/16 20:39	1
1,2,3,4,7,8-HxCDF	ND		47	0.28	pg/L		06/22/16 16:19	07/25/16 20:39	1
1,2,3,6,7,8-HxCDF	ND		47	0.25	pg/L		06/22/16 16:19	07/25/16 20:39	1
1,2,3,7,8,9-HxCDF	ND		47	0.28	pg/L		06/22/16 16:19	07/25/16 20:39	1
2,3,4,6,7,8-HxCDF	ND		47	0.27	pg/L		06/22/16 16:19	07/25/16 20:39	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

**Client Sample ID: EB-1 20160616-01**

**Lab Sample ID: 160-17845-3**

Date Collected: 06/16/16 17:00

Matrix: Water

Date Received: 06/17/16 10:50

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.49</b>	<b>J q B</b>	47	0.24	pg/L		06/22/16 16:19	07/25/16 20:39	1
1,2,3,4,6,7,8-HpCDF	ND		47	0.24	pg/L		06/22/16 16:19	07/25/16 20:39	1
1,2,3,4,7,8,9-HpCDF	ND		47	0.31	pg/L		06/22/16 16:19	07/25/16 20:39	1
<b>OCDD</b>	<b>3.0</b>	<b>J B</b>	95	0.37	pg/L		06/22/16 16:19	07/25/16 20:39	1
<b>OCDF</b>	<b>0.71</b>	<b>J B</b>	95	0.24	pg/L		06/22/16 16:19	07/25/16 20:39	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>13C-2,3,7,8-TCDD</i>	79		40 - 135				06/22/16 16:19	07/25/16 20:39	1
<i>13C-2,3,7,8-TCDF</i>	74		40 - 135				06/22/16 16:19	07/25/16 20:39	1
<i>13C-1,2,3,7,8-PeCDD</i>	81		40 - 135				06/22/16 16:19	07/25/16 20:39	1
<i>13C-1,2,3,7,8-PeCDF</i>	77		40 - 135				06/22/16 16:19	07/25/16 20:39	1
<i>13C-1,2,3,6,7,8-HxCDD</i>	83		40 - 135				06/22/16 16:19	07/25/16 20:39	1
<i>13C-1,2,3,4,7,8-HxCDF</i>	79		40 - 135				06/22/16 16:19	07/25/16 20:39	1
<i>13C-1,2,3,4,6,7,8-HpCDD</i>	94		40 - 135				06/22/16 16:19	07/25/16 20:39	1
<i>13C-1,2,3,4,6,7,8-HpCDF</i>	85		40 - 135				06/22/16 16:19	07/25/16 20:39	1
<i>13C-OCDD</i>	100		40 - 135				06/22/16 16:19	07/25/16 20:39	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	1.2	ug/L		06/30/16 10:17	07/13/16 08:37	2
Chromium	ND		10	1.0	ug/L		06/30/16 10:17	07/13/16 08:37	2
Thallium	ND		2.0	0.55	ug/L		06/30/16 10:17	07/13/16 08:37	2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	0.458	U	0.517	0.520	3.00	0.839	pCi/L	06/24/16 10:51	06/27/16 19:12	1
Gross Beta	-0.00498	U	0.480	0.480	4.00	0.852	pCi/L	06/24/16 10:51	06/27/16 19:12	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-5.29	U	15.0	15.0		20.5	pCi/L	06/20/16 09:22	06/20/16 17:31	1
Cesium-137	-6.91	U	7.11	7.15	20.0	19.5	pCi/L	06/20/16 09:22	06/20/16 17:31	1
Cobalt-60	2.15	U	1.63	1.64		11.8	pCi/L	06/20/16 09:22	06/20/16 17:31	1
<i>Other Detected Radionuclides</i>			<i>Count</i>	<i>Total</i>						
	<i>Result</i>	<i>Qualifier</i>	<i>Uncert.</i>	<i>Uncert.</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Tl-208</i>	9.80		8.08	8.14		4.89	pCi/L	06/20/16 09:22	06/20/16 17:31	1

**Client Sample ID: EB-2 20160616-01**

**Lab Sample ID: 160-17845-4**

Date Collected: 06/16/16 17:15

Matrix: Water

Date Received: 06/17/16 10:50

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND	*	0.19	0.048	ug/L		06/21/16 10:05	07/05/16 23:54	1
2-Methylnaphthalene	ND	*	0.19	0.029	ug/L		06/21/16 10:05	07/05/16 23:54	1
Acenaphthene	ND		0.19	0.033	ug/L		06/21/16 10:05	07/05/16 23:54	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

**Client Sample ID: EB-2 20160616-01**

**Lab Sample ID: 160-17845-4**

**Date Collected: 06/16/16 17:15**

**Matrix: Water**

**Date Received: 06/17/16 10:50**

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		0.19	0.036	ug/L		06/21/16 10:05	07/05/16 23:54	1
Anthracene	ND		0.19	0.037	ug/L		06/21/16 10:05	07/05/16 23:54	1
Benzo[a]anthracene	ND		0.19	0.029	ug/L		06/21/16 10:05	07/05/16 23:54	1
Benzo[a]pyrene	ND		0.19	0.050	ug/L		06/21/16 10:05	07/05/16 23:54	1
Benzo[b]fluoranthene	ND		0.19	0.052	ug/L		06/21/16 10:05	07/05/16 23:54	1
Benzo[g,h,i]perylene	ND		0.19	0.038	ug/L		06/21/16 10:05	07/05/16 23:54	1
Benzo[k]fluoranthene	ND		0.19	0.069	ug/L		06/21/16 10:05	07/05/16 23:54	1
Chrysene	ND		0.19	0.037	ug/L		06/21/16 10:05	07/05/16 23:54	1
Dibenz(a,h)anthracene	ND		0.19	0.044	ug/L		06/21/16 10:05	07/05/16 23:54	1
Fluoranthene	ND		0.19	0.032	ug/L		06/21/16 10:05	07/05/16 23:54	1
Fluorene	ND		0.19	0.030	ug/L		06/21/16 10:05	07/05/16 23:54	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.038	ug/L		06/21/16 10:05	07/05/16 23:54	1
Naphthalene	ND		0.19	0.065	ug/L		06/21/16 10:05	07/05/16 23:54	1
<b>Phenanthrene</b>	<b>0.089</b>	<b>J B</b>	0.19	0.062	ug/L		06/21/16 10:05	07/05/16 23:54	1
Pyrene	ND		0.19	0.035	ug/L		06/21/16 10:05	07/05/16 23:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	62		10 - 104				06/21/16 10:05	07/05/16 23:54	1
Nitrobenzene-d5 (Surr)	71		21 - 110				06/21/16 10:05	07/05/16 23:54	1
Terphenyl-d14 (Surr)	81		22 - 103				06/21/16 10:05	07/05/16 23:54	1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND	*	0.0095	0.0035	ug/L		06/21/16 14:30	06/22/16 14:44	1
PCB-1221	ND		0.0095	0.0056	ug/L		06/21/16 14:30	06/22/16 14:44	1
PCB-1232	ND		0.0095	0.0057	ug/L		06/21/16 14:30	06/22/16 14:44	1
PCB-1242	ND		0.0095	0.0032	ug/L		06/21/16 14:30	06/22/16 14:44	1
PCB-1248	ND		0.0095	0.0030	ug/L		06/21/16 14:30	06/22/16 14:44	1
PCB-1254	ND		0.0095	0.0042	ug/L		06/21/16 14:30	06/22/16 14:44	1
PCB-1260	ND	*	0.0095	0.0027	ug/L		06/21/16 14:30	06/22/16 14:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	99		16 - 150				06/21/16 14:30	06/22/16 14:44	1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.5	0.27	pg/L		06/22/16 16:19	07/25/16 21:26	1
2,3,7,8-TCDF	ND		9.5	0.20	pg/L		06/22/16 16:19	07/25/16 21:26	1
1,2,3,7,8-PeCDD	ND		48	0.33	pg/L		06/22/16 16:19	07/25/16 21:26	1
1,2,3,7,8-PeCDF	ND		48	0.31	pg/L		06/22/16 16:19	07/25/16 21:26	1
2,3,4,7,8-PeCDF	ND		48	0.31	pg/L		06/22/16 16:19	07/25/16 21:26	1
1,2,3,4,7,8-HxCDD	ND		48	0.28	pg/L		06/22/16 16:19	07/25/16 21:26	1
1,2,3,6,7,8-HxCDD	ND		48	0.27	pg/L		06/22/16 16:19	07/25/16 21:26	1
1,2,3,7,8,9-HxCDD	ND		48	0.23	pg/L		06/22/16 16:19	07/25/16 21:26	1
1,2,3,4,7,8-HxCDF	ND		48	0.31	pg/L		06/22/16 16:19	07/25/16 21:26	1
1,2,3,6,7,8-HxCDF	ND		48	0.28	pg/L		06/22/16 16:19	07/25/16 21:26	1
1,2,3,7,8,9-HxCDF	ND		48	0.31	pg/L		06/22/16 16:19	07/25/16 21:26	1
2,3,4,6,7,8-HxCDF	ND		48	0.30	pg/L		06/22/16 16:19	07/25/16 21:26	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.76</b>	<b>J q B</b>	48	0.18	pg/L		06/22/16 16:19	07/25/16 21:26	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.40</b>	<b>J B</b>	48	0.22	pg/L		06/22/16 16:19	07/25/16 21:26	1

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

**Client Sample ID: EB-2 20160616-01**

**Lab Sample ID: 160-17845-4**

**Date Collected: 06/16/16 17:15**

**Matrix: Water**

**Date Received: 06/17/16 10:50**

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8,9-HpCDF	ND		48	0.28	pg/L		06/22/16 16:19	07/25/16 21:26	1
<b>OCDD</b>	<b>5.7</b>	<b>J B</b>	95	0.32	pg/L		06/22/16 16:19	07/25/16 21:26	1
<b>OCDF</b>	<b>1.3</b>	<b>J B</b>	95	0.32	pg/L		06/22/16 16:19	07/25/16 21:26	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-2,3,7,8-TCDD	77		40 - 135				06/22/16 16:19	07/25/16 21:26	1
13C-2,3,7,8-TCDF	73		40 - 135				06/22/16 16:19	07/25/16 21:26	1
13C-1,2,3,7,8-PeCDD	79		40 - 135				06/22/16 16:19	07/25/16 21:26	1
13C-1,2,3,7,8-PeCDF	76		40 - 135				06/22/16 16:19	07/25/16 21:26	1
13C-1,2,3,6,7,8-HxCDD	77		40 - 135				06/22/16 16:19	07/25/16 21:26	1
13C-1,2,3,4,7,8-HxCDF	75		40 - 135				06/22/16 16:19	07/25/16 21:26	1
13C-1,2,3,4,6,7,8-HpCDD	91		40 - 135				06/22/16 16:19	07/25/16 21:26	1
13C-1,2,3,4,6,7,8-HpCDF	81		40 - 135				06/22/16 16:19	07/25/16 21:26	1
13C-OCDD	99		40 - 135				06/22/16 16:19	07/25/16 21:26	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	1.2	ug/L		06/30/16 10:17	07/13/16 08:43	2
Chromium	ND		10	1.0	ug/L		06/30/16 10:17	07/13/16 08:43	2
Thallium	ND		2.0	0.55	ug/L		06/30/16 10:17	07/13/16 08:43	2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	0.363	U	0.453	0.455	3.00	0.747	pCi/L	06/24/16 10:51	06/27/16 19:12	1
Gross Beta	0.0147	U	0.487	0.487	4.00	0.864	pCi/L	06/24/16 10:51	06/27/16 19:12	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-7.56	U	17.1	17.1		24.3	pCi/L	06/20/16 09:22	06/20/16 18:40	1
Cesium-137	3.92	U	8.66	8.67	20.0	15.0	pCi/L	06/20/16 09:22	06/20/16 18:40	1
<b>Cobalt-60</b>	<b>8.07</b>		5.77	5.83		6.79	pCi/L	06/20/16 09:22	06/20/16 18:40	1
<i>Other Detected Radionuclides</i>			<i>Count</i>	<i>Total</i>						
	<i>Result</i>	<i>Qualifier</i>	<i>Uncert.</i>	<i>Uncert.</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Bi-214	58.6		22.4	23.1		24.3	pCi/L	06/20/16 09:22	06/20/16 18:40	1

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

**Lab Sample ID: MB 160-257275/1-A**  
**Matrix: Water**  
**Analysis Batch: 259211**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 257275**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.20	0.050	ug/L		06/21/16 10:05	07/05/16 18:47	1
2-Methylnaphthalene	ND		0.20	0.030	ug/L		06/21/16 10:05	07/05/16 18:47	1
Acenaphthene	ND		0.20	0.035	ug/L		06/21/16 10:05	07/05/16 18:47	1
Acenaphthylene	ND		0.20	0.038	ug/L		06/21/16 10:05	07/05/16 18:47	1
Anthracene	ND		0.20	0.039	ug/L		06/21/16 10:05	07/05/16 18:47	1
Benzo[a]anthracene	ND		0.20	0.031	ug/L		06/21/16 10:05	07/05/16 18:47	1
Benzo[a]pyrene	ND		0.20	0.053	ug/L		06/21/16 10:05	07/05/16 18:47	1
Benzo[b]fluoranthene	ND		0.20	0.055	ug/L		06/21/16 10:05	07/05/16 18:47	1
Benzo[g,h,i]perylene	ND		0.20	0.040	ug/L		06/21/16 10:05	07/05/16 18:47	1
Benzo[k]fluoranthene	ND		0.20	0.073	ug/L		06/21/16 10:05	07/05/16 18:47	1
Chrysene	ND		0.20	0.039	ug/L		06/21/16 10:05	07/05/16 18:47	1
Dibenz(a,h)anthracene	ND		0.20	0.046	ug/L		06/21/16 10:05	07/05/16 18:47	1
Fluoranthene	ND		0.20	0.034	ug/L		06/21/16 10:05	07/05/16 18:47	1
Fluorene	ND		0.20	0.032	ug/L		06/21/16 10:05	07/05/16 18:47	1
Indeno[1,2,3-cd]pyrene	ND		0.20	0.040	ug/L		06/21/16 10:05	07/05/16 18:47	1
Naphthalene	ND		0.20	0.068	ug/L		06/21/16 10:05	07/05/16 18:47	1
Phenanthrene	0.0763	J	0.20	0.065	ug/L		06/21/16 10:05	07/05/16 18:47	1
Pyrene	ND		0.20	0.037	ug/L		06/21/16 10:05	07/05/16 18:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	88		10 - 104	06/21/16 10:05	07/05/16 18:47	1
Nitrobenzene-d5 (Surr)	88		21 - 110	06/21/16 10:05	07/05/16 18:47	1
Terphenyl-d14 (Surr)	95		22 - 103	06/21/16 10:05	07/05/16 18:47	1

**Lab Sample ID: LCS 160-257275/2-A**  
**Matrix: Water**  
**Analysis Batch: 259211**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257275**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	1.00	0.671	*	ug/L		67	70 - 130
2-Methylnaphthalene	1.00	0.677	*	ug/L		68	70 - 130
Acenaphthene	1.00	0.692		ug/L		69	36 - 98
Acenaphthylene	1.00	0.665		ug/L		66	37 - 97
Anthracene	1.00	0.682		ug/L		68	38 - 109
Benzo[a]anthracene	1.00	0.734		ug/L		73	51 - 111
Benzo[a]pyrene	1.00	0.658		ug/L		66	40 - 110
Benzo[b]fluoranthene	1.00	0.720		ug/L		72	40 - 122
Benzo[g,h,i]perylene	1.00	0.677		ug/L		68	37 - 111
Benzo[k]fluoranthene	1.00	0.729		ug/L		73	41 - 119
Chrysene	1.00	0.733		ug/L		73	52 - 107
Dibenz(a,h)anthracene	1.00	0.641		ug/L		64	36 - 118
Fluoranthene	1.00	0.737		ug/L		74	20 - 150
Fluorene	1.00	0.726		ug/L		73	21 - 126
Indeno[1,2,3-cd]pyrene	1.00	0.604		ug/L		60	31 - 130
Naphthalene	1.00	0.680		ug/L		68	34 - 97
Phenanthrene	1.00	0.779		ug/L		78	48 - 108
Pyrene	1.00	0.740		ug/L		74	43 - 124

TestAmerica St. Louis



# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: LCS 160-257275/2-A**  
**Matrix: Water**  
**Analysis Batch: 259211**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257275**

Surrogate	LCS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	69		10 - 104
Nitrobenzene-d5 (Surr)	70		21 - 110
Terphenyl-d14 (Surr)	78		22 - 103

**Lab Sample ID: LCSD 160-257275/3-A**  
**Matrix: Water**  
**Analysis Batch: 259211**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 257275**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
1-Methylnaphthalene	1.00	0.729		ug/L		73	70 - 130	8	20	
2-Methylnaphthalene	1.00	0.757		ug/L		76	70 - 130	11	20	
Acenaphthene	1.00	0.760		ug/L		76	36 - 98	9	20	
Acenaphthylene	1.00	0.733		ug/L		73	37 - 97	10	20	
Anthracene	1.00	0.733		ug/L		73	38 - 109	7	20	
Benzo[a]anthracene	1.00	0.784		ug/L		78	51 - 111	7	20	
Benzo[a]pyrene	1.00	0.731		ug/L		73	40 - 110	10	20	
Benzo[b]fluoranthene	1.00	0.728		ug/L		73	40 - 122	1	20	
Benzo[g,h,i]perylene	1.00	0.781		ug/L		78	37 - 111	14	20	
Benzo[k]fluoranthene	1.00	0.847		ug/L		85	41 - 119	15	20	
Chrysene	1.00	0.814		ug/L		81	52 - 107	10	20	
Dibenz(a,h)anthracene	1.00	0.576		ug/L		58	36 - 118	11	20	
Fluoranthene	1.00	0.797		ug/L		80	20 - 150	8	20	
Fluorene	1.00	0.784		ug/L		78	21 - 126	8	20	
Indeno[1,2,3-cd]pyrene	1.00	0.694		ug/L		69	31 - 130	14	20	
Naphthalene	1.00	0.749		ug/L		75	34 - 97	10	20	
Phenanthrene	1.00	0.833		ug/L		83	48 - 108	7	20	
Pyrene	1.00	0.820		ug/L		82	43 - 124	10	20	

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	68		10 - 104
Nitrobenzene-d5 (Surr)	71		21 - 110
Terphenyl-d14 (Surr)	79		22 - 103

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

**Lab Sample ID: MB 180-179799/1-A**  
**Matrix: Water**  
**Analysis Batch: 179836**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 179799**

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
PCB-1016	ND		0.010	0.0037	ug/L		06/21/16 12:30	06/22/16 12:31	1
PCB-1221	ND		0.010	0.0059	ug/L		06/21/16 12:30	06/22/16 12:31	1
PCB-1232	ND		0.010	0.0060	ug/L		06/21/16 12:30	06/22/16 12:31	1
PCB-1242	ND		0.010	0.0034	ug/L		06/21/16 12:30	06/22/16 12:31	1
PCB-1248	ND		0.010	0.0032	ug/L		06/21/16 12:30	06/22/16 12:31	1
PCB-1254	ND		0.010	0.0044	ug/L		06/21/16 12:30	06/22/16 12:31	1
PCB-1260	ND		0.010	0.0029	ug/L		06/21/16 12:30	06/22/16 12:31	1

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

**Lab Sample ID: MB 180-179799/1-A**  
**Matrix: Water**  
**Analysis Batch: 179836**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 179799**

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	127		16 - 150	06/21/16 12:30	06/22/16 12:31	1

**Lab Sample ID: LCS 180-179799/2-A**  
**Matrix: Water**  
**Analysis Batch: 179836**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 179799**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	1.00	1.45	*	ug/L		145	58 - 120
PCB-1260	1.00	1.64	*	ug/L		164	54 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	108		16 - 150

**Lab Sample ID: LCSD 180-179799/3-A**  
**Matrix: Water**  
**Analysis Batch: 179836**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 179799**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016	1.00	1.19		ug/L		119	58 - 120	19	27
PCB-1260	1.00	1.24		ug/L		124	54 - 130	28	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	66		16 - 150

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

**Lab Sample ID: MB 320-114948/1-A**  
**Matrix: Water**  
**Analysis Batch: 119413**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 114948**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		10	0.29	pg/L		06/22/16 16:19	07/25/16 16:46	1
2,3,7,8-TCDF	ND		10	0.24	pg/L		06/22/16 16:19	07/25/16 16:46	1
1,2,3,7,8-PeCDD	ND		50	0.31	pg/L		06/22/16 16:19	07/25/16 16:46	1
1,2,3,7,8-PeCDF	ND		50	0.27	pg/L		06/22/16 16:19	07/25/16 16:46	1
2,3,4,7,8-PeCDF	ND		50	0.28	pg/L		06/22/16 16:19	07/25/16 16:46	1
1,2,3,4,7,8-HxCDD	ND		50	0.25	pg/L		06/22/16 16:19	07/25/16 16:46	1
1,2,3,6,7,8-HxCDD	0.473	J q	50	0.25	pg/L		06/22/16 16:19	07/25/16 16:46	1
1,2,3,7,8,9-HxCDD	ND		50	0.21	pg/L		06/22/16 16:19	07/25/16 16:46	1
1,2,3,4,7,8-HxCDF	ND		50	0.33	pg/L		06/22/16 16:19	07/25/16 16:46	1
1,2,3,6,7,8-HxCDF	ND		50	0.30	pg/L		06/22/16 16:19	07/25/16 16:46	1
1,2,3,7,8,9-HxCDF	ND		50	0.33	pg/L		06/22/16 16:19	07/25/16 16:46	1
2,3,4,6,7,8-HxCDF	ND		50	0.32	pg/L		06/22/16 16:19	07/25/16 16:46	1
1,2,3,4,6,7,8-HpCDD	3.03	J	50	0.34	pg/L		06/22/16 16:19	07/25/16 16:46	1
1,2,3,4,6,7,8-HpCDF	2.16	J	50	0.25	pg/L		06/22/16 16:19	07/25/16 16:46	1
1,2,3,4,7,8,9-HpCDF	0.502	J q	50	0.33	pg/L		06/22/16 16:19	07/25/16 16:46	1
OCDD	26.7	J	100	0.38	pg/L		06/22/16 16:19	07/25/16 16:46	1

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: MB 320-114948/1-A**  
**Matrix: Water**  
**Analysis Batch: 119413**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 114948**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDF	9.80	J	100	0.31	pg/L		06/22/16 16:19	07/25/16 16:46	1
MB MB									
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	77		40 - 135				06/22/16 16:19	07/25/16 16:46	1
13C-2,3,7,8-TCDF	73		40 - 135				06/22/16 16:19	07/25/16 16:46	1
13C-1,2,3,7,8-PeCDD	78		40 - 135				06/22/16 16:19	07/25/16 16:46	1
13C-1,2,3,7,8-PeCDF	74		40 - 135				06/22/16 16:19	07/25/16 16:46	1
13C-1,2,3,6,7,8-HxCDD	80		40 - 135				06/22/16 16:19	07/25/16 16:46	1
13C-1,2,3,4,7,8-HxCDF	77		40 - 135				06/22/16 16:19	07/25/16 16:46	1
13C-1,2,3,4,6,7,8-HpCDD	87		40 - 135				06/22/16 16:19	07/25/16 16:46	1
13C-1,2,3,4,6,7,8-HpCDF	81		40 - 135				06/22/16 16:19	07/25/16 16:46	1
13C-OCDD	93		40 - 135				06/22/16 16:19	07/25/16 16:46	1

**Lab Sample ID: LCS 320-114948/2-A**  
**Matrix: Water**  
**Analysis Batch: 119413**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 114948**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	200	216		pg/L		108	64 - 142
2,3,7,8-TCDF	200	220		pg/L		110	71 - 142
1,2,3,7,8-PeCDD	1000	1080		pg/L		108	71 - 140
1,2,3,7,8-PeCDF	1000	1100		pg/L		110	76 - 135
2,3,4,7,8-PeCDF	1000	1080		pg/L		108	74 - 137
1,2,3,4,7,8-HxCDD	1000	1100		pg/L		110	56 - 146
1,2,3,6,7,8-HxCDD	1000	1080		pg/L		108	73 - 144
1,2,3,7,8,9-HxCDD	1000	1050		pg/L		105	71 - 151
1,2,3,4,7,8-HxCDF	1000	1120		pg/L		112	75 - 131
1,2,3,6,7,8-HxCDF	1000	1080		pg/L		108	76 - 133
1,2,3,7,8,9-HxCDF	1000	1090		pg/L		109	77 - 142
2,3,4,6,7,8-HxCDF	1000	1120		pg/L		112	80 - 137
1,2,3,4,6,7,8-HpCDD	1000	1060		pg/L		106	78 - 139
1,2,3,4,6,7,8-HpCDF	1000	1070		pg/L		107	79 - 133
1,2,3,4,7,8,9-HpCDF	1000	1170		pg/L		117	83 - 130
OCDD	2000	2110		pg/L		106	80 - 132
OCDF	2000	2110		pg/L		106	72 - 140
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C-2,3,7,8-TCDD	83		40 - 135				
13C-2,3,7,8-TCDF	78		40 - 135				
13C-1,2,3,7,8-PeCDD	85		40 - 135				
13C-1,2,3,7,8-PeCDF	80		40 - 135				
13C-1,2,3,6,7,8-HxCDD	84		40 - 135				
13C-1,2,3,4,7,8-HxCDF	81		40 - 135				
13C-1,2,3,4,6,7,8-HpCDD	95		40 - 135				
13C-1,2,3,4,6,7,8-HpCDF	87		40 - 135				
13C-OCDD	103		40 - 135				

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: LCSD 320-114948/3-A**

**Matrix: Water**

**Analysis Batch: 119413**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

**Prep Batch: 114948**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
2,3,7,8-TCDD	200	220		pg/L		110	64 - 142	2	20
2,3,7,8-TCDF	200	223		pg/L		112	71 - 142	1	20
1,2,3,7,8-PeCDD	1000	1120		pg/L		112	71 - 140	4	20
1,2,3,7,8-PeCDF	1000	1140		pg/L		114	76 - 135	3	20
2,3,4,7,8-PeCDF	1000	1130		pg/L		113	74 - 137	5	20
1,2,3,4,7,8-HxCDD	1000	1150		pg/L		115	56 - 146	5	20
1,2,3,6,7,8-HxCDD	1000	1120		pg/L		112	73 - 144	4	20
1,2,3,7,8,9-HxCDD	1000	1080		pg/L		108	71 - 151	3	20
1,2,3,4,7,8-HxCDF	1000	1140		pg/L		114	75 - 131	2	20
1,2,3,6,7,8-HxCDF	1000	1110		pg/L		111	76 - 133	3	20
1,2,3,7,8,9-HxCDF	1000	1110		pg/L		111	77 - 142	2	20
2,3,4,6,7,8-HxCDF	1000	1140		pg/L		114	80 - 137	1	20
1,2,3,4,6,7,8-HpCDD	1000	1110		pg/L		111	78 - 139	4	20
1,2,3,4,6,7,8-HpCDF	1000	1110		pg/L		111	79 - 133	3	20
1,2,3,4,7,8,9-HpCDF	1000	1210		pg/L		121	83 - 130	4	20
OCDD	2000	2210		pg/L		110	80 - 132	4	20
OCDF	2000	2200		pg/L		110	72 - 140	4	20

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-2,3,7,8-TCDD	82		40 - 135
13C-2,3,7,8-TCDF	78		40 - 135
13C-1,2,3,7,8-PeCDD	83		40 - 135
13C-1,2,3,7,8-PeCDF	79		40 - 135
13C-1,2,3,6,7,8-HxCDD	85		40 - 135
13C-1,2,3,4,7,8-HxCDF	83		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	97		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	89		40 - 135
13C-OCDD	107		40 - 135

## Method: 6020A - Metals (ICP/MS)

**Lab Sample ID: MB 160-258657/1-A**

**Matrix: Water**

**Analysis Batch: 260322**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 258657**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	1.2	ug/L		06/30/16 10:17	07/13/16 07:29	2
Chromium	ND		10	1.0	ug/L		06/30/16 10:17	07/13/16 07:29	2
Thallium	ND		2.0	0.55	ug/L		06/30/16 10:17	07/13/16 07:29	2

**Lab Sample ID: LCS 160-258657/2-A**

**Matrix: Water**

**Analysis Batch: 260322**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 258657**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	1000	995		ug/L		99	80 - 120
Chromium	1000	1010		ug/L		101	80 - 120
Thallium	200	200		ug/L		100	80 - 120

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Method: 6020A - Metals (ICP/MS) (Continued)

**Lab Sample ID: 160-17845-1 MS**

**Matrix: Water**

**Analysis Batch: 260322**

**Client Sample ID: RB-1 20160616-01**

**Prep Type: Total/NA**

**Prep Batch: 258657**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	ND		1000	995		ug/L		100	75 - 125
Chromium	ND		1000	1010		ug/L		101	75 - 125
Thallium	ND		200	205		ug/L		102	75 - 125

**Lab Sample ID: 160-17845-1 MSD**

**Matrix: Water**

**Analysis Batch: 260322**

**Client Sample ID: RB-1 20160616-01**

**Prep Type: Total/NA**

**Prep Batch: 258657**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	ND		1000	1010		ug/L		101	75 - 125	1	20
Chromium	ND		1000	1030		ug/L		103	75 - 125	2	20
Thallium	ND		200	205		ug/L		102	75 - 125	0	20

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

**Lab Sample ID: MB 160-257892/1-A**

**Matrix: Water**

**Analysis Batch: 258026**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 257892**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.4069	U	0.597	0.598	3.00	1.01	pCi/L	06/24/16 10:51	06/27/16 19:12	1
Gross Beta	0.2084	U	0.568	0.568	4.00	0.969	pCi/L	06/24/16 10:51	06/27/16 19:12	1

**Lab Sample ID: LCS 160-257892/2-A**

**Matrix: Water**

**Analysis Batch: 258026**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 257892**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	Limits
Gross Alpha	50.0	44.91		6.58	3.00	1.79	pCi/L	90	73 - 133

**Lab Sample ID: LCSB 160-257892/3-A**

**Matrix: Water**

**Analysis Batch: 258026**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 257892**

Analyte	Spike Added	LCSB Result	LCSB Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	Limits
Gross Beta	92.6	94.53		9.98	4.00	1.05	pCi/L	102	75 - 125

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-257073/1-A**

**Matrix: Water**

**Analysis Batch: 257651**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 257073**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	-3.975	U	13.7	13.7		23.0	pCi/L	06/20/16 09:22	06/22/16 14:47	1

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS) (Continued)

**Lab Sample ID: MB 160-257073/1-A**  
**Matrix: Water**  
**Analysis Batch: 257651**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 257073**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Cesium-137	3.100	U	7.59	7.60	20.0	12.8	pCi/L	06/20/16 09:22	06/22/16 14:47	1
Cobalt-60	1.684	U	6.30	6.31		8.33	pCi/L	06/20/16 09:22	06/22/16 14:47	1
<b>Other Detected Radionuclides</b>										
Other Detected Radionuclides	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Other Detected Radionuclide	None						pCi/L	06/20/16 09:22	06/22/16 14:47	1

**Lab Sample ID: LCS 160-257073/2-A**  
**Matrix: Water**  
**Analysis Batch: 257611**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257073**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Americium-241	137000	134100		15500		232	pCi/L	98	90 - 111
Cesium-137	47700	46590		4670	20.0	97.2	pCi/L	98	90 - 111
Cobalt-60	43300	41290		4080		70.3	pCi/L	95	89 - 110

**Lab Sample ID: 160-17845-1 DU**  
**Matrix: Water**  
**Analysis Batch: 257608**

**Client Sample ID: RB-1 20160616-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257073**

Analyte	Sample	Sample	DU	DU	Total	RL	MDC	Unit	RER	RER
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					Limit
Americium-241	2.76	U	-13.53	U	8.21		24.2	pCi/L		0.69
Cesium-137	-2.45	U	-4.665	U	7.39	20.0	12.3	pCi/L		0.16
Cobalt-60	2.77	U	-0.7679	U	7.56		9.49	pCi/L		0.29
<b>Other Detected Radionuclides</b>										
Other Detected Radionuclides	Sample	Sample	DU	DU	Total	RL	MDC	Unit	RER	RER
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					Limit
Other Detected Radionuclide	None		None					pCi/L		

# QC Association Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## GC/MS Semi VOA

### Prep Batch: 257275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17845-1	RB-1 20160616-01	Total/NA	Water	3510C	
160-17845-2	RB-2 20160616-01	Total/NA	Water	3510C	
160-17845-3	EB-1 20160616-01	Total/NA	Water	3510C	
160-17845-4	EB-2 20160616-01	Total/NA	Water	3510C	
MB 160-257275/1-A	Method Blank	Total/NA	Water	3510C	
LCS 160-257275/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 160-257275/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

### Analysis Batch: 259211

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17845-1	RB-1 20160616-01	Total/NA	Water	8270D SIM	257275
160-17845-2	RB-2 20160616-01	Total/NA	Water	8270D SIM	257275
160-17845-3	EB-1 20160616-01	Total/NA	Water	8270D SIM	257275
160-17845-4	EB-2 20160616-01	Total/NA	Water	8270D SIM	257275
MB 160-257275/1-A	Method Blank	Total/NA	Water	8270D SIM	257275
LCS 160-257275/2-A	Lab Control Sample	Total/NA	Water	8270D SIM	257275
LCSD 160-257275/3-A	Lab Control Sample Dup	Total/NA	Water	8270D SIM	257275

## GC Semi VOA

### Prep Batch: 179799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17845-1	RB-1 20160616-01	Total/NA	Water	3510C	
160-17845-2	RB-2 20160616-01	Total/NA	Water	3510C	
160-17845-3	EB-1 20160616-01	Total/NA	Water	3510C	
160-17845-4	EB-2 20160616-01	Total/NA	Water	3510C	
MB 180-179799/1-A	Method Blank	Total/NA	Water	3510C	
LCS 180-179799/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 180-179799/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

### Analysis Batch: 179836

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17845-1	RB-1 20160616-01	Total/NA	Water	8082	179799
160-17845-2	RB-2 20160616-01	Total/NA	Water	8082	179799
160-17845-3	EB-1 20160616-01	Total/NA	Water	8082	179799
160-17845-4	EB-2 20160616-01	Total/NA	Water	8082	179799
MB 180-179799/1-A	Method Blank	Total/NA	Water	8082	179799
LCS 180-179799/2-A	Lab Control Sample	Total/NA	Water	8082	179799
LCSD 180-179799/3-A	Lab Control Sample Dup	Total/NA	Water	8082	179799

## Specialty Organics

### Prep Batch: 114948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17845-1	RB-1 20160616-01	Total/NA	Water	8290	
160-17845-2	RB-2 20160616-01	Total/NA	Water	8290	
160-17845-3	EB-1 20160616-01	Total/NA	Water	8290	
160-17845-4	EB-2 20160616-01	Total/NA	Water	8290	
MB 320-114948/1-A	Method Blank	Total/NA	Water	8290	
LCS 320-114948/2-A	Lab Control Sample	Total/NA	Water	8290	

TestAmerica St. Louis



# QC Association Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Specialty Organics (Continued)

### Prep Batch: 114948 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 320-114948/3-A	Lab Control Sample Dup	Total/NA	Water	8290	

### Analysis Batch: 119413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17845-1	RB-1 20160616-01	Total/NA	Water	8290A	114948
160-17845-2	RB-2 20160616-01	Total/NA	Water	8290A	114948
160-17845-3	EB-1 20160616-01	Total/NA	Water	8290A	114948
160-17845-4	EB-2 20160616-01	Total/NA	Water	8290A	114948
MB 320-114948/1-A	Method Blank	Total/NA	Water	8290A	114948
LCS 320-114948/2-A	Lab Control Sample	Total/NA	Water	8290A	114948
LCSD 320-114948/3-A	Lab Control Sample Dup	Total/NA	Water	8290A	114948

## Metals

### Prep Batch: 258657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17845-1	RB-1 20160616-01	Total/NA	Water	3010A	
160-17845-2	RB-2 20160616-01	Total/NA	Water	3010A	
160-17845-3	EB-1 20160616-01	Total/NA	Water	3010A	
160-17845-4	EB-2 20160616-01	Total/NA	Water	3010A	
MB 160-258657/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-258657/2-A	Lab Control Sample	Total/NA	Water	3010A	
160-17845-1 MS	RB-1 20160616-01	Total/NA	Water	3010A	
160-17845-1 MSD	RB-1 20160616-01	Total/NA	Water	3010A	

### Analysis Batch: 260322

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17845-1	RB-1 20160616-01	Total/NA	Water	6020A	258657
160-17845-2	RB-2 20160616-01	Total/NA	Water	6020A	258657
160-17845-3	EB-1 20160616-01	Total/NA	Water	6020A	258657
160-17845-4	EB-2 20160616-01	Total/NA	Water	6020A	258657
MB 160-258657/1-A	Method Blank	Total/NA	Water	6020A	258657
LCS 160-258657/2-A	Lab Control Sample	Total/NA	Water	6020A	258657
160-17845-1 MS	RB-1 20160616-01	Total/NA	Water	6020A	258657
160-17845-1 MSD	RB-1 20160616-01	Total/NA	Water	6020A	258657

## Rad

### Prep Batch: 257073

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17845-1	RB-1 20160616-01	Total/NA	Water	Fill_Geo-0	
160-17845-2	RB-2 20160616-01	Total/NA	Water	Fill_Geo-0	
160-17845-3	EB-1 20160616-01	Total/NA	Water	Fill_Geo-0	
160-17845-4	EB-2 20160616-01	Total/NA	Water	Fill_Geo-0	
MB 160-257073/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-257073/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
160-17845-1 DU	RB-1 20160616-01	Total/NA	Water	Fill_Geo-0	

TestAmerica St. Louis



# QC Association Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Rad (Continued)

### Prep Batch: 257892

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17845-1	RB-1 20160616-01	Total/NA	Water	Evaporation	
160-17845-2	RB-2 20160616-01	Total/NA	Water	Evaporation	
160-17845-3	EB-1 20160616-01	Total/NA	Water	Evaporation	
160-17845-4	EB-2 20160616-01	Total/NA	Water	Evaporation	
MB 160-257892/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-257892/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-257892/3-A	Lab Control Sample	Total/NA	Water	Evaporation	

# Surrogate Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		FBP (10-104)	NBZ (21-110)	TPH (22-103)
160-17845-1	RB-1 20160616-01	76	82	95
160-17845-2	RB-2 20160616-01	61	67	72
160-17845-3	EB-1 20160616-01	77	84	87
160-17845-4	EB-2 20160616-01	62	71	81
LCS 160-257275/2-A	Lab Control Sample	69	70	78
LCSD 160-257275/3-A	Lab Control Sample Dup	68	71	79
MB 160-257275/1-A	Method Blank	88	88	95

**Surrogate Legend**

FBP = 2-Fluorobiphenyl (Surr)

NBZ = Nitrobenzene-d5 (Surr)

TPH = Terphenyl-d14 (Surr)

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		DCB1 (16-150)	DCB2 (16-150)
160-17845-1	RB-1 20160616-01	102	98
160-17845-2	RB-2 20160616-01	106	100
160-17845-3	EB-1 20160616-01	96	93
160-17845-4	EB-2 20160616-01	99	95
LCS 180-179799/2-A	Lab Control Sample	108	102
LCSD 180-179799/3-A	Lab Control Sample Dup	66	61
MB 180-179799/1-A	Method Blank	123	127

**Surrogate Legend**

DCB = DCB Decachlorobiphenyl (Surr)

# Isotope Dilution Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17845-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (40-135)	TCDF (40-135)	PeCDD (40-135)	PeCDF1 (40-135)	HxCDD2 (40-135)	HxCDF1 (40-135)	HpCDD (40-135)	HpCDF1 (40-135)
160-17845-1	RB-1 20160616-01	81	76	83	80	87	82	97	89
160-17845-2	RB-2 20160616-01	78	73	80	75	80	77	91	83
160-17845-3	EB-1 20160616-01	79	74	81	77	83	79	94	85
160-17845-4	EB-2 20160616-01	77	73	79	76	77	75	91	81
LCS 320-114948/2-A	Lab Control Sample	83	78	85	80	84	81	95	87
LCSD 320-114948/3-A	Lab Control Sample Dup	82	78	83	79	85	83	97	89
MB 320-114948/1-A	Method Blank	77	73	78	74	80	77	87	81

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OCDD (40-135)
160-17845-1	RB-1 20160616-01	105
160-17845-2	RB-2 20160616-01	100
160-17845-3	EB-1 20160616-01	100
160-17845-4	EB-2 20160616-01	99
LCS 320-114948/2-A	Lab Control Sample	103
LCSD 320-114948/3-A	Lab Control Sample Dup	107
MB 320-114948/1-A	Method Blank	93

#### Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- OCDD = 13C-OCDD

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis  
13715 Rider Trail North  
Earth City, MO 63045  
Tel: (314)298-8566

TestAmerica Job ID: 160-17883-1

Client Project/Site: Former Reid Hospital Site  
Revision: 1

For:

Environmental Resources Management Inc  
8425 Woodfield Crossing Blvd  
Suite 560-W  
Indianapolis, Indiana 46240

Attn: Mr. Aaron Friedrich

*Elizabeth M. Hoerchler*

Authorized for release by:  
9/16/2016 3:50:03 PM

Elizabeth Hoerchler, Project Mgmt. Assistant  
(314)298-8566  
[elizabeth.hoerchler@testamericainc.com](mailto:elizabeth.hoerchler@testamericainc.com)

### LINKS

Review your project  
results through  
**Total Access**

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Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*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.*

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# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

**Job ID: 160-17883-1**

**Laboratory: TestAmerica St. Louis**

**Narrative**

## CASE NARRATIVE

**Client: Environmental Resources Management Inc**

**Project: Former Reid Hospital Site**

**Report Number: 160-17883-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

### **RECEIPT**

The samples were received on 06/21/2016; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.3° C, 0.7° C and 1.6° C.

### **Receipt Exceptions**

The laboratory received two liter poly for MW-7 and one liter poly for DUP-GW with pH of 7. Nitric acid, lot 929870, was added and the pH is now below 2 for all bottles.

The dioxin container for the following sample was received broken with no sample left: MW-7 (160-17883-1), DUP-GW (160-17883-2) and MW-6 (160-17883-3).

### **SEMIVOLATILE ORGANIC COMPOUNDS-SIM**

Samples MW-7 (160-17883-1), DUP-GW (160-17883-2) and MW-6 (160-17883-3) were analyzed for Semivolatile Organic Compounds-SIM in accordance with EPA SW-846 Method 8270D\_SIM. The samples were prepared on 06/22/2016 and analyzed on 07/08/2016 and 07/09/2016.

# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## Job ID: 160-17883-1 (Continued)

### Laboratory: TestAmerica St. Louis (Continued)

2-Methylnaphthalene and 1-Methylnaphthalene recovered outside advisory limits of 70-130 in the LCS associated with batch 160-257495. Until there are enough data points to generate in-house limits, the data will be reported with a narrative. (LCS 160-257495/2-A)

The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 160-257495 and analytical batch 160-259751 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected. (160-17883-B-1-A MS) and (160-17883-C-1-A MSD)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **METALS (ICP/MS)**

Samples MW-7 (160-17883-1), DUP-GW (160-17883-2) and MW-6 (160-17883-3) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 07/07/2016 and analyzed on 07/14/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **METALS (ICPMS)**

Samples MW-7 (160-17883-1), DUP-GW (160-17883-2) and MW-6 (160-17883-3) were analyzed for Metals (ICPMS) in accordance with EPA SW-846 Methods 6020A. The samples were prepared on 07/07/2016 and analyzed on 07/14/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **GROSS ALPHA AND GROSS BETA RADIOACTIVITY**

Samples MW-7 (160-17883-1), DUP-GW (160-17883-2) and MW-6 (160-17883-3) were analyzed for Gross Alpha and Gross Beta Radioactivity in accordance with USEPA Method 900.0. The samples were prepared on 06/24/2016 and analyzed on 06/27/2016.

The gross alpha detection goal (3.00 pCi/L) was not met for the following samples in batch 160-257892 due to a reduction of the sample size attributed to high residual mass: MW-7 (160-17883-1) and MW-6 (160-17883-3). Analytical results are reported with the detection limit achieved.

The gross alpha detection goal (3.00 pCi/L) and gross beta detection goal (4.00 pCi/L) were not met for the following sample in batch 160-257892 due to a reduction of the sample size attributed to high residual mass: DUP-GW (160-17883-2). Analytical results are reported with the detection limit achieved.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **CESIUM 137 AND OTHER GAMMA EMITTERS (GS)**

Samples MW-7 (160-17883-1), DUP-GW (160-17883-2) and MW-6 (160-17883-3) were analyzed for Cesium 137 and Other Gamma Emitters (GS) in accordance with USEPA Method 901.1. The samples were prepared on 06/24/2016 and analyzed on 07/01/2016.

Americium-241, Cesium-137 and Cobalt-60 exceeded the RPD limit for the duplicate of sample MW-7DU (160-17883-1). Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### **DIOXINS AND FURANS (HRGC/HRMS)**

Samples DUP-GW (160-17883-2) and MW-6 (160-17883-3) were analyzed for Dioxins and Furans (HRGC/HRMS) in accordance with SW846 8290A. The samples were prepared on 06/27/2016 and analyzed on 07/25/2016.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

>>> Select a Laboratory <<<

TestAmerica  
13715 Rider Trail North  
Earth City, MO 63045

# Chain of Custody Record

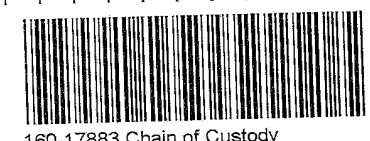


THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other:

Client Contact				Project Manager: Michael Franks		Site Contact: Chris Burrows				Date:		COC No:					
ERM 8425 Woodfield Crossing Suite 560 W Indianapolis, IN 46240 (317) 706-2000 Phone (317) 706-2010 FAX Project Name: Former Reid Hospital Site: 1401 Chester Blvd, Richmond, IN P O # 0315592				Tel/Fax:		Lab Contact:				Carrier:		3 of 3 COCs					
Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day						Filtered Sample (Y/N)		Perform MS / MSD (Y/N)		Select Metals * Select Metals - Field Filtered Radionuclides Pesticides Drugs		Sampler:					
												For Lab Use Only: Walk-in Client: Lab Sampling:					
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.								Job / SDG No.:			
MW-7		6/20/16	1650	G	WT	9	X	X	X	X		Sample Specific Notes:					
Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other													Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)				
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. <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown						<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months											
Special Instructions/QC Requirements & Comments: Metals include Arsenic, Chromium, Thallium & Lithium																	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No			Custody Seal No.:			Cooler Temp. (°C): Obs'd: _____ Corr'd: _____			Therm ID No.:								
Relinquished by: <i>Chris [Signature]</i>			Company: ERM			Date/Time: 6/20/16/1445			Received by: <i>B [Signature]</i>			Company: TA			Date/Time: 6/20/16 0910		
Relinquished by:			Company:			Date/Time:			Received by:			Company:			Date/Time:		
Relinquished by:			Company:			Date/Time:			Received in Laboratory by:			Company:			Date/Time:		



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9/16/2016





>>> Select a Laboratory <<<

TestAmerica  
13715 Rider Trail North  
Earth City, MO 63045

# Chain of Custody Record

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other:

Client Contact		Project Manager: Michael Franks			Site Contact: Chris Burrows			Date:		COC No:		
ERM		Tel/Fax:			Lab Contact:			Carrier:		2 of 3 COCs		
8425 Woodfield Crossing Suite 560 W		Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS			Filtered Sample (Y/N)			Perform MS / MSD (Y/N)			Sampler: For Lab Use Only: Walk-in Client: Lab Sampling:	
Indianapolis, IN 46240												
(317) 706-2000 Phone		TAT if different from Below _____			Select Metals* Select Metals* - Field Filtered Radionuclides PACs DMX-17						Job / SDG No.:	
(317) 706-2010 FAX		<input checked="" type="checkbox"/> 2 weeks										
Project Name: Former Reid Hospital		<input type="checkbox"/> 1 week										
Site: 1401 Chester Blvd, Richmond, IN		<input type="checkbox"/> 2 days										
P O # 0315592		<input type="checkbox"/> 1 day										
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.						Sample Specific Notes:
Dup-GW		6-20-16	-	G	WT	9		X	X	X	X	
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.							Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)					
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown							<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months					
Special Instructions/QC Requirements & Comments: * Metals include Arsenic, Chromium, Thallium + Lithium												
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:			Cooler Temp. (°C): Obs'd:		Corr'd:		Therm ID No.:			
Relinquished by: <i>Chris</i>		Company: ERM		Date/Time: 6-20/1945		Received by: <i>B-F</i>		Company: <i>JA</i>		Date/Time: 6/21/16 0910		
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:		
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:		

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9/16/2016





# TestAmerica St. Louis

13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

## Chain of Custody Record



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information (Sub Contract Lab)</b>				Sampler:		Lab PM: Hoerchler, Elizabeth M				Carrier Tracking No(s):				COC No: 160-87424.1		
				Client Contact: Shipping/Receiving		Phone:		E-Mail: elizabeth.hoerchler@testamericainc.com								Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.					<b>Analysis Requested</b>										Job #: 160-17883-1	
Address: 880 Riverside Parkway, City: West Sacramento, State, Zip: CA, 95605															Due Date Requested: 7/14/2016	
Project Name: Former Reid Hospital Site					Project #: 16005365		PO #:		WO #:		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Total Number of containers	
Site: SSOW#:					Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		8290A/8290_P_Sep 17 Isomers List			
Sample Identification - Client ID (Lab ID)															Special Instructions/Note:	
					MW-7 (160-17883-1)		6/20/16 16:50 Eastern				Water		X		1	
					DUP-GW (160-17883-2)		6/20/16 Eastern				Water		X		1	
					MW-6 (160-17883-3)		6/20/16 13:25 Eastern				Water		X		1	
rec'd All bottles broken as of 6-23-16																
<b>Possible Hazard Identification</b>					Level 1 radioactive		Deliverable Requested: I, II, III, IV, Other (specify)									
Empty Kit Relinquished by:					Date:		Time:				Method of Shipment:					
Relinquished by: <i>Jim Clarke</i>					Date/Time: 6-22-16 1700		Company: TASC		Received by: <i>[Signature]</i>		Date/Time: 6/23/16 0930		Company: TASC			
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: 3.3			

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9/16/2016





**TestAmerica St. Louis**

13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

**Chain of Custody Record****TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information (Sub Contract Lab)</b>				Sampler: _____		Lab PM: _____		Carrier Tracking No(s): _____		COC No: _____																																																																																																																															
Client Contact: _____				Phone: _____		Hoerchler, Elizabeth M				Page: _____																																																																																																																															
Shipping/Receiving						E-Mail: _____				Page 1 of 1																																																																																																																															
Company: _____				<b>Analysis Requested</b>				Job #: _____																																																																																																																																	
TestAmerica Laboratories, Inc.								Preservation Codes:																																																																																																																																	
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Site: _____		SSOW#: _____																																																																																																																																							

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9/16/2016



# Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 160-17883-1

**Login Number: 17883**  
**List Number: 1**  
**Creator: Daniels, Brian J**

**List Source: TestAmerica St. Louis**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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	Samples MW-7 and DUP-GW were received with pH of 7. Nitric acid adjusted the pH to <math>< 2</math> SU for all containers.
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math>< 6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 160-17883-1

**Login Number: 17883**  
**List Number: 2**  
**Creator: Shockley, Wesley S**

**List Source: TestAmerica Sacramento**  
**List Creation: 06/25/16 11:38 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Definitions/Glossary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

## Glossary

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

# Method Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

Method	Method Description	Protocol	Laboratory
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SL
8290A	Dioxins and Furans (HRGC/HRMS)	SW846	TAL SAC
6020A	Metals (ICP/MS)	SW846	TAL SL
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
Local Method	General Sub Contract Method	NONE	TAL RCH

#### Protocol References:

EPA = US Environmental Protection Agency

NONE = NONE

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

#### Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Sample Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-17883-1	MW-7 20160620-01	Water	06/20/16 16:50	06/21/16 09:10
160-17883-2	DUP-GW 20160620-01	Water	06/20/16 00:00	06/21/16 09:10
160-17883-3	MW-6 20160620-01	Water	06/20/16 13:25	06/21/16 09:10

1

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# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

**Client Sample ID: MW-7 20160620-01**

**Lab Sample ID: 160-17883-1**

**Date Collected: 06/20/16 16:50**

**Matrix: Water**

**Date Received: 06/21/16 09:10**

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND	*	0.19	0.047	ug/L		06/22/16 10:39	07/08/16 22:42	1
2-Methylnaphthalene	ND	*	0.19	0.028	ug/L		06/22/16 10:39	07/08/16 22:42	1
Acenaphthene	ND		0.19	0.033	ug/L		06/22/16 10:39	07/08/16 22:42	1
Acenaphthylene	ND		0.19	0.036	ug/L		06/22/16 10:39	07/08/16 22:42	1
Anthracene	ND		0.19	0.037	ug/L		06/22/16 10:39	07/08/16 22:42	1
Benzo[a]anthracene	ND		0.19	0.029	ug/L		06/22/16 10:39	07/08/16 22:42	1
Benzo[a]pyrene	ND	F1	0.19	0.050	ug/L		06/22/16 10:39	07/08/16 22:42	1
Benzo[b]fluoranthene	ND	F1 F2	0.19	0.052	ug/L		06/22/16 10:39	07/08/16 22:42	1
Benzo[g,h,i]perylene	ND	F1 F2	0.19	0.038	ug/L		06/22/16 10:39	07/08/16 22:42	1
Benzo[k]fluoranthene	ND		0.19	0.069	ug/L		06/22/16 10:39	07/08/16 22:42	1
Chrysene	ND		0.19	0.037	ug/L		06/22/16 10:39	07/08/16 22:42	1
Dibenz(a,h)anthracene	ND	F1	0.19	0.043	ug/L		06/22/16 10:39	07/08/16 22:42	1
Fluoranthene	ND		0.19	0.032	ug/L		06/22/16 10:39	07/08/16 22:42	1
Fluorene	ND		0.19	0.030	ug/L		06/22/16 10:39	07/08/16 22:42	1
Indeno[1,2,3-cd]pyrene	ND	F1	0.19	0.038	ug/L		06/22/16 10:39	07/08/16 22:42	1
Naphthalene	ND		0.19	0.064	ug/L		06/22/16 10:39	07/08/16 22:42	1
Phenanthrene	ND		0.19	0.061	ug/L		06/22/16 10:39	07/08/16 22:42	1
Pyrene	ND		0.19	0.035	ug/L		06/22/16 10:39	07/08/16 22:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	56		10 - 104	06/22/16 10:39	07/08/16 22:42	1
Nitrobenzene-d5 (Surr)	62		21 - 110	06/22/16 10:39	07/08/16 22:42	1
Terphenyl-d14 (Surr)	63		22 - 103	06/22/16 10:39	07/08/16 22:42	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>3.6</b>	<b>J</b>	10	1.2	ug/L		07/07/16 12:43	07/14/16 20:33	2
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 20:33	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 20:33	2
<b>Lithium</b>	<b>2.5</b>	<b>J</b>	5.0	1.1	ug/L		07/07/16 12:43	07/14/16 20:33	2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>4.9</b>	<b>J</b>	10	1.2	ug/L		07/07/16 12:43	07/14/16 19:06	2
<b>Chromium</b>	<b>3.6</b>	<b>J</b>	10	1.0	ug/L		07/07/16 12:43	07/14/16 19:06	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 19:06	2
<b>Lithium</b>	<b>4.4</b>	<b>J</b>	5.0	1.1	ug/L		07/07/16 12:43	07/14/16 19:06	2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	3.69	U G	4.16	4.18	3.00	6.75	pCi/L	06/24/16 10:51	06/27/16 19:12	1
Gross Beta	1.45	U	2.06	2.07	4.00	3.39	pCi/L	06/24/16 10:51	06/27/16 19:12	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	4.82	U	10.8	10.8		14.6	pCi/L	06/24/16 15:14	07/01/16 12:57	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

**Client Sample ID: MW-7 20160620-01**

**Lab Sample ID: 160-17883-1**

Date Collected: 06/20/16 16:50

Matrix: Water

Date Received: 06/21/16 09:10

**Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS) (Continued)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Cesium-137	-2.99	U	7.48	7.48	20.0	15.2	pCi/L	06/24/16 15:14	07/01/16 12:57	1
Cobalt-60	-1.21	U	11.9	11.9		14.3	pCi/L	06/24/16 15:14	07/01/16 12:57	1
<b>Other Detected</b>										
Radionuclides	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Bi-214	55.3		16.3	17.2		14.0	pCi/L	06/24/16 15:14	07/01/16 12:57	1
Pb-214	74.2		14.7	16.5		15.2	pCi/L	06/24/16 15:14	07/01/16 12:57	1

**Client Sample ID: DUP-GW 20160620-01**

**Lab Sample ID: 160-17883-2**

Date Collected: 06/20/16 00:00

Matrix: Water

Date Received: 06/21/16 09:10

**Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND	*	0.19	0.047	ug/L		06/22/16 10:39	07/09/16 00:24	1
2-Methylnaphthalene	ND	*	0.19	0.028	ug/L		06/22/16 10:39	07/09/16 00:24	1
Acenaphthene	ND		0.19	0.033	ug/L		06/22/16 10:39	07/09/16 00:24	1
Acenaphthylene	ND		0.19	0.036	ug/L		06/22/16 10:39	07/09/16 00:24	1
Anthracene	ND		0.19	0.037	ug/L		06/22/16 10:39	07/09/16 00:24	1
Benzo[a]anthracene	ND		0.19	0.029	ug/L		06/22/16 10:39	07/09/16 00:24	1
Benzo[a]pyrene	ND		0.19	0.050	ug/L		06/22/16 10:39	07/09/16 00:24	1
Benzo[b]fluoranthene	ND		0.19	0.052	ug/L		06/22/16 10:39	07/09/16 00:24	1
Benzo[g,h,i]perylene	ND		0.19	0.038	ug/L		06/22/16 10:39	07/09/16 00:24	1
Benzo[k]fluoranthene	ND		0.19	0.069	ug/L		06/22/16 10:39	07/09/16 00:24	1
Chrysene	ND		0.19	0.037	ug/L		06/22/16 10:39	07/09/16 00:24	1
Dibenz(a,h)anthracene	ND		0.19	0.043	ug/L		06/22/16 10:39	07/09/16 00:24	1
Fluoranthene	ND		0.19	0.032	ug/L		06/22/16 10:39	07/09/16 00:24	1
Fluorene	ND		0.19	0.030	ug/L		06/22/16 10:39	07/09/16 00:24	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.038	ug/L		06/22/16 10:39	07/09/16 00:24	1
Naphthalene	ND		0.19	0.064	ug/L		06/22/16 10:39	07/09/16 00:24	1
Phenanthrene	ND		0.19	0.061	ug/L		06/22/16 10:39	07/09/16 00:24	1
Pyrene	ND		0.19	0.035	ug/L		06/22/16 10:39	07/09/16 00:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	54		10 - 104				06/22/16 10:39	07/09/16 00:24	1
Nitrobenzene-d5 (Surr)	50		21 - 110				06/22/16 10:39	07/09/16 00:24	1
Terphenyl-d14 (Surr)	66		22 - 103				06/22/16 10:39	07/09/16 00:24	1

**Method: 8290A - Dioxins and Furans (HRGC/HRMS)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.5	0.27	pg/L		06/27/16 15:03	07/25/16 18:04	1
2,3,7,8-TCDF	ND		9.5	0.11	pg/L		06/27/16 15:03	07/25/16 18:04	1
1,2,3,7,8-PeCDD	ND		48	0.27	pg/L		06/27/16 15:03	07/25/16 18:04	1
1,2,3,7,8-PeCDF	ND		48	0.17	pg/L		06/27/16 15:03	07/25/16 18:04	1
2,3,4,7,8-PeCDF	ND		48	0.18	pg/L		06/27/16 15:03	07/25/16 18:04	1
1,2,3,4,7,8-HxCDD	ND		48	0.13	pg/L		06/27/16 15:03	07/25/16 18:04	1
1,2,3,6,7,8-HxCDD	ND		48	0.12	pg/L		06/27/16 15:03	07/25/16 18:04	1
<b>1,2,3,7,8,9-HxCDD</b>	<b>0.30</b>	<b>J B</b>	48	0.10	pg/L		06/27/16 15:03	07/25/16 18:04	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

**Client Sample ID: DUP-GW 20160620-01**

**Lab Sample ID: 160-17883-2**

Date Collected: 06/20/16 00:00

Matrix: Water

Date Received: 06/21/16 09:10

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>1,2,3,4,7,8-HxCDF</b>	<b>0.32</b>	<b>J q</b>	48	0.12	pg/L		06/27/16 15:03	07/25/16 18:04	1
1,2,3,6,7,8-HxCDF	ND		48	0.11	pg/L		06/27/16 15:03	07/25/16 18:04	1
1,2,3,7,8,9-HxCDF	ND		48	0.11	pg/L		06/27/16 15:03	07/25/16 18:04	1
<b>2,3,4,6,7,8-HxCDF</b>	<b>0.22</b>	<b>J</b>	48	0.11	pg/L		06/27/16 15:03	07/25/16 18:04	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>1.3</b>	<b>J B</b>	48	0.15	pg/L		06/27/16 15:03	07/25/16 18:04	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.70</b>	<b>J B</b>	48	0.13	pg/L		06/27/16 15:03	07/25/16 18:04	1
1,2,3,4,7,8,9-HpCDF	ND		48	0.16	pg/L		06/27/16 15:03	07/25/16 18:04	1
<b>OCDD</b>	<b>24</b>	<b>J B</b>	95	0.33	pg/L		06/27/16 15:03	07/25/16 18:04	1
<b>OCDF</b>	<b>1.7</b>	<b>J B</b>	95	0.23	pg/L		06/27/16 15:03	07/25/16 18:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	76		40 - 135				06/27/16 15:03	07/25/16 18:04	1
13C-2,3,7,8-TCDF	87		40 - 135				06/27/16 15:03	07/25/16 18:04	1
13C-1,2,3,7,8-PeCDD	76		40 - 135				06/27/16 15:03	07/25/16 18:04	1
13C-1,2,3,7,8-PeCDF	84		40 - 135				06/27/16 15:03	07/25/16 18:04	1
13C-1,2,3,6,7,8-HxCDD	78		40 - 135				06/27/16 15:03	07/25/16 18:04	1
13C-1,2,3,4,7,8-HxCDF	78		40 - 135				06/27/16 15:03	07/25/16 18:04	1
13C-1,2,3,4,6,7,8-HpCDD	74		40 - 135				06/27/16 15:03	07/25/16 18:04	1
13C-1,2,3,4,6,7,8-HpCDF	83		40 - 135				06/27/16 15:03	07/25/16 18:04	1
13C-OCDD	62		40 - 135				06/27/16 15:03	07/25/16 18:04	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>19</b>		10	1.2	ug/L		07/07/16 12:43	07/14/16 20:40	2
<b>Chromium</b>	<b>1.7</b>	<b>J</b>	10	1.0	ug/L		07/07/16 12:43	07/14/16 20:40	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 20:40	2
<b>Lithium</b>	<b>8.9</b>		5.0	1.1	ug/L		07/07/16 12:43	07/14/16 20:40	2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>19</b>		10	1.2	ug/L		07/07/16 12:43	07/14/16 19:12	2
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 19:12	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 19:12	2
<b>Lithium</b>	<b>8.5</b>		5.0	1.1	ug/L		07/07/16 12:43	07/14/16 19:12	2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
<b>Gross Alpha</b>	<b>14.1</b>	<b>G</b>	7.40	7.57	3.00	10.2	pCi/L	06/24/16 10:51	06/27/16 19:12	1
Gross Beta	0.471	U G	2.84	2.84	4.00	4.74	pCi/L	06/24/16 10:51	06/27/16 19:12	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	6.24	U	17.9	17.9		29.9	pCi/L	06/24/16 15:14	07/01/16 13:00	1
Cesium-137	-1.18	U	7.98	7.98	20.0	14.1	pCi/L	06/24/16 15:14	07/01/16 13:00	1
Cobalt-60	3.10	U	7.10	7.11		8.60	pCi/L	06/24/16 15:14	07/01/16 13:00	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

**Client Sample ID: DUP-GW 20160620-01**

**Lab Sample ID: 160-17883-2**

Date Collected: 06/20/16 00:00

Matrix: Water

Date Received: 06/21/16 09:10

Other Detected Radionuclides	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Bi-214	36.0		16.7	17.1		18.6	pCi/L	06/24/16 15:14	07/01/16 13:00	1
K-40	127		63.9	65.2		59.4	pCi/L	06/24/16 15:14	07/01/16 13:00	1
Pb-214	30.2		17.0	17.3		19.6	pCi/L	06/24/16 15:14	07/01/16 13:00	1

**Client Sample ID: MW-6 20160620-01**

**Lab Sample ID: 160-17883-3**

Date Collected: 06/20/16 13:25

Matrix: Water

Date Received: 06/21/16 09:10

**Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND	*	0.19	0.047	ug/L		06/22/16 10:39	07/09/16 00:57	1
2-Methylnaphthalene	ND	*	0.19	0.028	ug/L		06/22/16 10:39	07/09/16 00:57	1
Acenaphthene	ND		0.19	0.033	ug/L		06/22/16 10:39	07/09/16 00:57	1
Acenaphthylene	ND		0.19	0.036	ug/L		06/22/16 10:39	07/09/16 00:57	1
Anthracene	ND		0.19	0.037	ug/L		06/22/16 10:39	07/09/16 00:57	1
Benzo[a]anthracene	ND		0.19	0.029	ug/L		06/22/16 10:39	07/09/16 00:57	1
Benzo[a]pyrene	ND		0.19	0.050	ug/L		06/22/16 10:39	07/09/16 00:57	1
Benzo[b]fluoranthene	ND		0.19	0.052	ug/L		06/22/16 10:39	07/09/16 00:57	1
Benzo[g,h,i]perylene	ND		0.19	0.038	ug/L		06/22/16 10:39	07/09/16 00:57	1
Benzo[k]fluoranthene	ND		0.19	0.069	ug/L		06/22/16 10:39	07/09/16 00:57	1
Chrysene	ND		0.19	0.037	ug/L		06/22/16 10:39	07/09/16 00:57	1
Dibenz(a,h)anthracene	ND		0.19	0.043	ug/L		06/22/16 10:39	07/09/16 00:57	1
Fluoranthene	ND		0.19	0.032	ug/L		06/22/16 10:39	07/09/16 00:57	1
Fluorene	ND		0.19	0.030	ug/L		06/22/16 10:39	07/09/16 00:57	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.038	ug/L		06/22/16 10:39	07/09/16 00:57	1
Naphthalene	ND		0.19	0.064	ug/L		06/22/16 10:39	07/09/16 00:57	1
Phenanthrene	ND		0.19	0.061	ug/L		06/22/16 10:39	07/09/16 00:57	1
Pyrene	ND		0.19	0.035	ug/L		06/22/16 10:39	07/09/16 00:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	72		10 - 104				06/22/16 10:39	07/09/16 00:57	1
Nitrobenzene-d5 (Surr)	66		21 - 110				06/22/16 10:39	07/09/16 00:57	1
Terphenyl-d14 (Surr)	91		22 - 103				06/22/16 10:39	07/09/16 00:57	1

**Method: 8290A - Dioxins and Furans (HRGC/HRMS)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.4	0.21	pg/L		06/27/16 15:03	07/25/16 18:50	1
2,3,7,8-TCDF	ND		9.4	0.11	pg/L		06/27/16 15:03	07/25/16 18:50	1
1,2,3,7,8-PeCDD	ND		47	0.23	pg/L		06/27/16 15:03	07/25/16 18:50	1
1,2,3,7,8-PeCDF	ND		47	0.17	pg/L		06/27/16 15:03	07/25/16 18:50	1
2,3,4,7,8-PeCDF	ND		47	0.17	pg/L		06/27/16 15:03	07/25/16 18:50	1
1,2,3,4,7,8-HxCDD	ND		47	0.15	pg/L		06/27/16 15:03	07/25/16 18:50	1
1,2,3,6,7,8-HxCDD	ND		47	0.13	pg/L		06/27/16 15:03	07/25/16 18:50	1
<b>1,2,3,7,8,9-HxCDD</b>	<b>0.22</b>	<b>J q B</b>	47	0.12	pg/L		06/27/16 15:03	07/25/16 18:50	1
<b>1,2,3,4,7,8-HxCDF</b>	<b>0.26</b>	<b>J q</b>	47	0.096	pg/L		06/27/16 15:03	07/25/16 18:50	1
1,2,3,6,7,8-HxCDF	ND		47	0.087	pg/L		06/27/16 15:03	07/25/16 18:50	1
<b>1,2,3,7,8,9-HxCDF</b>	<b>0.23</b>	<b>J</b>	47	0.092	pg/L		06/27/16 15:03	07/25/16 18:50	1
2,3,4,6,7,8-HxCDF	ND		47	0.093	pg/L		06/27/16 15:03	07/25/16 18:50	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.45</b>	<b>J q B</b>	47	0.13	pg/L		06/27/16 15:03	07/25/16 18:50	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

**Client Sample ID: MW-6 20160620-01**

**Lab Sample ID: 160-17883-3**

Date Collected: 06/20/16 13:25

Matrix: Water

Date Received: 06/21/16 09:10

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.28</b>	<b>J q B</b>	47	0.13	pg/L		06/27/16 15:03	07/25/16 18:50	1
1,2,3,4,7,8,9-HpCDF	ND		47	0.16	pg/L		06/27/16 15:03	07/25/16 18:50	1
<b>OCDD</b>	<b>3.4</b>	<b>J B</b>	94	0.25	pg/L		06/27/16 15:03	07/25/16 18:50	1
<b>OCDF</b>	<b>0.91</b>	<b>J B</b>	94	0.19	pg/L		06/27/16 15:03	07/25/16 18:50	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-2,3,7,8-TCDD	78		40 - 135				06/27/16 15:03	07/25/16 18:50	1
13C-2,3,7,8-TCDF	86		40 - 135				06/27/16 15:03	07/25/16 18:50	1
13C-1,2,3,7,8-PeCDD	79		40 - 135				06/27/16 15:03	07/25/16 18:50	1
13C-1,2,3,7,8-PeCDF	87		40 - 135				06/27/16 15:03	07/25/16 18:50	1
13C-1,2,3,6,7,8-HxCDD	85		40 - 135				06/27/16 15:03	07/25/16 18:50	1
13C-1,2,3,4,7,8-HxCDF	84		40 - 135				06/27/16 15:03	07/25/16 18:50	1
13C-1,2,3,4,6,7,8-HpCDD	77		40 - 135				06/27/16 15:03	07/25/16 18:50	1
13C-1,2,3,4,6,7,8-HpCDF	86		40 - 135				06/27/16 15:03	07/25/16 18:50	1
13C-OCDD	64		40 - 135				06/27/16 15:03	07/25/16 18:50	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>19</b>		10	1.2	ug/L		07/07/16 12:43	07/14/16 20:47	2
<b>Chromium</b>	<b>1.2</b>	<b>J</b>	10	1.0	ug/L		07/07/16 12:43	07/14/16 20:47	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 20:47	2
<b>Lithium</b>	<b>8.9</b>		5.0	1.1	ug/L		07/07/16 12:43	07/14/16 20:47	2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>19</b>		10	1.2	ug/L		07/07/16 12:43	07/14/16 19:19	2
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 19:19	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 19:19	2
<b>Lithium</b>	<b>8.7</b>		5.0	1.1	ug/L		07/07/16 12:43	07/14/16 19:19	2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	3.22	U G	4.34	4.35	3.00	7.29	pCi/L	06/24/16 10:51	06/27/16 19:12	1
Gross Beta	-0.524	U	2.16	2.16	4.00	3.94	pCi/L	06/24/16 10:51	06/27/16 19:12	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-8.22	U	18.1	18.2		30.2	pCi/L	06/24/16 15:14	07/01/16 15:05	1
Cesium-137	-8.10	U	8.07	8.11	20.0	17.7	pCi/L	06/24/16 15:14	07/01/16 15:05	1
Cobalt-60	-8.94	U	9.66	9.70		17.2	pCi/L	06/24/16 15:14	07/01/16 15:05	1
<i>Other Detected Radionuclides</i>			<i>Count</i>	<i>Total</i>						
	<i>Result</i>	<i>Qualifier</i>	<i>Uncert.</i>	<i>Uncert.</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Other Detected Radionuclide</i>	<i>None</i>		<i>(2σ+/-)</i>	<i>(2σ+/-)</i>			<i>pCi/L</i>	<i>06/24/16 15:14</i>	<i>07/01/16 15:05</i>	<i>1</i>

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

**Lab Sample ID: MB 160-257495/1-A**

**Matrix: Water**

**Analysis Batch: 259751**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 257495**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.20	0.050	ug/L		06/22/16 10:39	07/08/16 15:55	1
2-Methylnaphthalene	ND		0.20	0.030	ug/L		06/22/16 10:39	07/08/16 15:55	1
Acenaphthene	ND		0.20	0.035	ug/L		06/22/16 10:39	07/08/16 15:55	1
Acenaphthylene	ND		0.20	0.038	ug/L		06/22/16 10:39	07/08/16 15:55	1
Anthracene	ND		0.20	0.039	ug/L		06/22/16 10:39	07/08/16 15:55	1
Benzo[a]anthracene	ND		0.20	0.031	ug/L		06/22/16 10:39	07/08/16 15:55	1
Benzo[a]pyrene	ND		0.20	0.053	ug/L		06/22/16 10:39	07/08/16 15:55	1
Benzo[b]fluoranthene	ND		0.20	0.055	ug/L		06/22/16 10:39	07/08/16 15:55	1
Benzo[g,h,i]perylene	ND		0.20	0.040	ug/L		06/22/16 10:39	07/08/16 15:55	1
Benzo[k]fluoranthene	ND		0.20	0.073	ug/L		06/22/16 10:39	07/08/16 15:55	1
Chrysene	ND		0.20	0.039	ug/L		06/22/16 10:39	07/08/16 15:55	1
Dibenz(a,h)anthracene	ND		0.20	0.046	ug/L		06/22/16 10:39	07/08/16 15:55	1
Fluoranthene	ND		0.20	0.034	ug/L		06/22/16 10:39	07/08/16 15:55	1
Fluorene	ND		0.20	0.032	ug/L		06/22/16 10:39	07/08/16 15:55	1
Indeno[1,2,3-cd]pyrene	ND		0.20	0.040	ug/L		06/22/16 10:39	07/08/16 15:55	1
Naphthalene	ND		0.20	0.068	ug/L		06/22/16 10:39	07/08/16 15:55	1
Phenanthrene	ND		0.20	0.065	ug/L		06/22/16 10:39	07/08/16 15:55	1
Pyrene	ND		0.20	0.037	ug/L		06/22/16 10:39	07/08/16 15:55	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	41		10 - 104	06/22/16 10:39	07/08/16 15:55	1
Nitrobenzene-d5 (Surr)	59		21 - 110	06/22/16 10:39	07/08/16 15:55	1
Terphenyl-d14 (Surr)	76		22 - 103	06/22/16 10:39	07/08/16 15:55	1

**Lab Sample ID: LCS 160-257495/2-A**

**Matrix: Water**

**Analysis Batch: 259751**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 257495**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	1.00	0.484	*	ug/L		48	70 - 130
2-Methylnaphthalene	1.00	0.475	*	ug/L		47	70 - 130
Acenaphthene	1.00	0.533		ug/L		53	36 - 98
Acenaphthylene	1.00	0.482		ug/L		48	37 - 97
Anthracene	1.00	0.535		ug/L		53	38 - 109
Benzo[a]anthracene	1.00	0.597		ug/L		60	51 - 111
Benzo[a]pyrene	1.00	0.529		ug/L		53	40 - 110
Benzo[b]fluoranthene	1.00	0.540		ug/L		54	40 - 122
Benzo[g,h,i]perylene	1.00	0.585		ug/L		58	37 - 111
Benzo[k]fluoranthene	1.00	0.729		ug/L		73	41 - 119
Chrysene	1.00	0.755		ug/L		76	52 - 107
Dibenz(a,h)anthracene	1.00	0.462		ug/L		46	36 - 118
Fluoranthene	1.00	0.604		ug/L		60	20 - 150
Fluorene	1.00	0.539		ug/L		54	21 - 126
Indeno[1,2,3-cd]pyrene	1.00	0.374		ug/L		37	31 - 130
Naphthalene	1.00	0.504		ug/L		50	34 - 97
Phenanthrene	1.00	0.626		ug/L		63	48 - 108
Pyrene	1.00	0.659		ug/L		66	43 - 124

TestAmerica St. Louis



# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: LCS 160-257495/2-A**  
**Matrix: Water**  
**Analysis Batch: 259751**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257495**

Surrogate	LCS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	30		10 - 104
Nitrobenzene-d5 (Surr)	39		21 - 110
Terphenyl-d14 (Surr)	67		22 - 103

**Lab Sample ID: 160-17883-1 MS**  
**Matrix: Water**  
**Analysis Batch: 259751**

**Client Sample ID: MW-7 20160620-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257495**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	Limits
				Result	Qualifier				
1-Methylnaphthalene	ND	*	0.943	0.678		ug/L		72	50 - 150
2-Methylnaphthalene	ND	*	0.943	0.693		ug/L		74	50 - 150
Acenaphthene	ND		0.943	0.698		ug/L		74	50 - 150
Acenaphthylene	ND		0.943	0.665		ug/L		71	50 - 150
Anthracene	ND		0.943	0.661		ug/L		70	50 - 150
Benzo[a]anthracene	ND		0.943	0.679		ug/L		72	50 - 150
Benzo[a]pyrene	ND	F1	0.943	0.453	F1	ug/L		48	50 - 150
Benzo[b]fluoranthene	ND	F1 F2	0.943	0.456	F1	ug/L		48	50 - 150
Benzo[g,h,i]perylene	ND	F1 F2	0.943	0.162	J F1	ug/L		17	50 - 150
Benzo[k]fluoranthene	ND		0.943	0.602		ug/L		64	50 - 150
Chrysene	ND		0.943	0.733		ug/L		78	50 - 150
Dibenz(a,h)anthracene	ND	F1	0.943	0.101	J F1	ug/L		11	50 - 150
Fluoranthene	ND		0.943	0.752		ug/L		80	50 - 150
Fluorene	ND		0.943	0.698		ug/L		74	50 - 150
Indeno[1,2,3-cd]pyrene	ND	F1	0.943	0.128	J F1	ug/L		14	50 - 150
Naphthalene	ND		0.943	0.706		ug/L		75	50 - 150
Phenanthrene	ND		0.943	0.745		ug/L		79	50 - 150
Pyrene	ND		0.943	0.721		ug/L		76	50 - 150

Surrogate	MS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	71		10 - 104
Nitrobenzene-d5 (Surr)	67		21 - 110
Terphenyl-d14 (Surr)	73		22 - 103

**Lab Sample ID: 160-17883-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 259751**

**Client Sample ID: MW-7 20160620-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257495**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	Limits	RPD	
				Result	Qualifier					RPD	Limit
1-Methylnaphthalene	ND	*	0.943	0.637		ug/L		68	50 - 150	6	20
2-Methylnaphthalene	ND	*	0.943	0.643		ug/L		68	50 - 150	7	20
Acenaphthene	ND		0.943	0.640		ug/L		68	50 - 150	9	20
Acenaphthylene	ND		0.943	0.597		ug/L		63	50 - 150	11	20
Anthracene	ND		0.943	0.604		ug/L		64	50 - 150	9	20
Benzo[a]anthracene	ND		0.943	0.597		ug/L		63	50 - 150	13	20
Benzo[a]pyrene	ND	F1	0.943	0.389	F1	ug/L		41	50 - 150	15	20
Benzo[b]fluoranthene	ND	F1 F2	0.943	0.359	F1 F2	ug/L		38	50 - 150	24	20
Benzo[g,h,i]perylene	ND	F1 F2	0.943	0.127	J F1 F2	ug/L		13	50 - 150	24	20
Benzo[k]fluoranthene	ND		0.943	0.539		ug/L		57	50 - 150	11	20

TestAmerica St. Louis



# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: 160-17883-1 MSD**

**Matrix: Water**

**Analysis Batch: 259751**

**Client Sample ID: MW-7 20160620-01**

**Prep Type: Total/NA**

**Prep Batch: 257495**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Chrysene	ND		0.943	0.693		ug/L		73	50 - 150	6	20
Dibenz(a,h)anthracene	ND	F1	0.943	0.0873	J F1	ug/L		9	50 - 150	14	20
Fluoranthene	ND		0.943	0.661		ug/L		70	50 - 150	13	20
Fluorene	ND		0.943	0.650		ug/L		69	50 - 150	7	20
Indeno[1,2,3-cd]pyrene	ND	F1	0.943	0.112	J F1	ug/L		12	50 - 150	13	20
Naphthalene	ND		0.943	0.659		ug/L		70	50 - 150	7	20
Phenanthrene	ND		0.943	0.677		ug/L		72	50 - 150	10	20
Pyrene	ND		0.943	0.685		ug/L		73	50 - 150	5	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl (Surr)	66		10 - 104
Nitrobenzene-d5 (Surr)	61		21 - 110
Terphenyl-d14 (Surr)	69		22 - 103

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

**Lab Sample ID: MB 320-115602/1-A**

**Matrix: Water**

**Analysis Batch: 119384**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 115602**

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,3,7,8-TCDD	ND		10	0.21	pg/L		06/27/16 15:03	07/25/16 23:13	1
2,3,7,8-TCDF	ND		10	0.11	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,7,8-PeCDD	ND		50	0.24	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,7,8-PeCDF	ND		50	0.17	pg/L		06/27/16 15:03	07/25/16 23:13	1
2,3,4,7,8-PeCDF	ND		50	0.17	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,4,7,8-HxCDD	ND		50	0.16	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,6,7,8-HxCDD	ND		50	0.14	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,7,8,9-HxCDD	0.194	J q	50	0.12	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,4,7,8-HxCDF	ND		50	0.20	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,6,7,8-HxCDF	ND		50	0.18	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,7,8,9-HxCDF	ND		50	0.19	pg/L		06/27/16 15:03	07/25/16 23:13	1
2,3,4,6,7,8-HxCDF	ND		50	0.19	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,4,6,7,8-HpCDD	0.682	J	50	0.15	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,4,6,7,8-HpCDF	0.359	J	50	0.13	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,4,7,8,9-HpCDF	ND		50	0.15	pg/L		06/27/16 15:03	07/25/16 23:13	1
OCDD	2.17	J	100	0.29	pg/L		06/27/16 15:03	07/25/16 23:13	1
OCDF	0.702	J	100	0.22	pg/L		06/27/16 15:03	07/25/16 23:13	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	79		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-2,3,7,8-TCDF	87		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,7,8-PeCDD	85		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,7,8-PeCDF	89		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,6,7,8-HxCDD	81		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,4,7,8-HxCDF	79		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,4,6,7,8-HpCDD	72		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,4,6,7,8-HpCDF	78		40 - 135	06/27/16 15:03	07/25/16 23:13	1

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# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: MB 320-115602/1-A**  
**Matrix: Water**  
**Analysis Batch: 119384**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 115602**

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-OCDD	60	MB MB	40 - 135	06/27/16 15:03	07/25/16 23:13	1

**Lab Sample ID: LCS 320-115602/2-A**  
**Matrix: Water**  
**Analysis Batch: 119384**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 115602**

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
2,3,7,8-TCDD	200	232		pg/L		116	64 - 142
2,3,7,8-TCDF	200	204		pg/L		102	71 - 142
1,2,3,7,8-PeCDD	1000	1180		pg/L		118	71 - 140
1,2,3,7,8-PeCDF	1000	1100		pg/L		110	76 - 135
2,3,4,7,8-PeCDF	1000	1140		pg/L		114	74 - 137
1,2,3,4,7,8-HxCDD	1000	1050		pg/L		105	56 - 146
1,2,3,6,7,8-HxCDD	1000	1060		pg/L		106	73 - 144
1,2,3,7,8,9-HxCDD	1000	999		pg/L		100	71 - 151
1,2,3,4,7,8-HxCDF	1000	1090		pg/L		109	75 - 131
1,2,3,6,7,8-HxCDF	1000	1100		pg/L		110	76 - 133
1,2,3,7,8,9-HxCDF	1000	1010		pg/L		101	77 - 142
2,3,4,6,7,8-HxCDF	1000	1110		pg/L		111	80 - 137
1,2,3,4,6,7,8-HpCDD	1000	1140		pg/L		114	78 - 139
1,2,3,4,6,7,8-HpCDF	1000	1120		pg/L		112	79 - 133
1,2,3,4,7,8,9-HpCDF	1000	1080		pg/L		108	83 - 130
OCDD	2000	2200		pg/L		110	80 - 132
OCDF	2000	2300		pg/L		115	72 - 140

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-2,3,7,8-TCDD	78	LCS LCS	40 - 135
13C-2,3,7,8-TCDF	85		40 - 135
13C-1,2,3,7,8-PeCDD	75		40 - 135
13C-1,2,3,7,8-PeCDF	82		40 - 135
13C-1,2,3,6,7,8-HxCDD	84		40 - 135
13C-1,2,3,4,7,8-HxCDF	79		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	72		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	78		40 - 135
13C-OCDD	61		40 - 135

## Method: 6020A - Metals (ICP/MS)

**Lab Sample ID: MB 160-259572/1-A**  
**Matrix: Water**  
**Analysis Batch: 260702**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 259572**

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Arsenic	ND	MB MB	10	1.2	ug/L		07/07/16 12:43	07/14/16 18:52	2
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 18:52	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 18:52	2
Lithium	ND		5.0	1.1	ug/L		07/07/16 12:43	07/14/16 18:52	2

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## Method: 6020A - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCS 160-259572/2-A**  
**Matrix: Water**  
**Analysis Batch: 260702**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 259572**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	1000	1030		ug/L		103	80 - 120
Chromium	1000	1030		ug/L		103	80 - 120
Thallium	200	200		ug/L		100	80 - 120
Lithium	1000	1050		ug/L		105	80 - 120

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

**Lab Sample ID: MB 160-257892/1-A**  
**Matrix: Water**  
**Analysis Batch: 258026**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 257892**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.4069	U	0.597	0.598	3.00	1.01	pCi/L	06/24/16 10:51	06/27/16 19:12	1
Gross Beta	0.2084	U	0.568	0.568	4.00	0.969	pCi/L	06/24/16 10:51	06/27/16 19:12	1

**Lab Sample ID: LCS 160-257892/2-A**  
**Matrix: Water**  
**Analysis Batch: 258026**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257892**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	50.0	44.91		6.58	3.00	1.79	pCi/L	90	73 - 133

**Lab Sample ID: LCSB 160-257892/3-A**  
**Matrix: Water**  
**Analysis Batch: 258026**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257892**

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	92.6	94.53		9.98	4.00	1.05	pCi/L	102	75 - 125

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-257931/1-A**  
**Matrix: Water**  
**Analysis Batch: 258948**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 257931**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Americium-241	-9.999	U	12.5	12.6		21.7	pCi/L	06/24/16 15:14	07/01/16 08:56	1
Cesium-137	-2.724	U	7.27	7.28	20.0	12.3	pCi/L	06/24/16 15:14	07/01/16 08:56	1
Cobalt-60	-0.7679	U	7.56	7.56		9.49	pCi/L	06/24/16 15:14	07/01/16 08:56	1
<i>Other Detected Radionuclides</i>		<i>Count</i>		<i>Total</i>						
<i>Other Detected Radionuclide</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>Uncert. (2σ+/-)</i>	<i>Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Other Detected Radionuclide</i>	<i>None</i>						<i>pCi/L</i>	<i>06/24/16 15:14</i>	<i>07/01/16 08:56</i>	<i>1</i>

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS) (Continued)

**Lab Sample ID: LCS 160-257931/2-A**  
**Matrix: Water**  
**Analysis Batch: 258946**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257931**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	137000	133200		15400		309	pCi/L	98	90 - 111
Cesium-137	47700	46760		4680	20.0	110	pCi/L	98	90 - 111
Cobalt-60	43200	41770		4130		70.1	pCi/L	97	89 - 110

**Lab Sample ID: 160-17883-1 DU**  
**Matrix: Water**  
**Analysis Batch: 258946**

**Client Sample ID: MW-7 20160620-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257931**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Americium-241	4.82	U	1.960	U	7.21		11.4	pCi/L	0.16	1
Cesium-137	-2.99	U	-0.1434	U	5.64	20.0	9.86	pCi/L	0.22	1
Cobalt-60	-1.21	U	2.760	U	5.93		7.79	pCi/L	0.22	1
<b>Total</b>										
Other Detected Radionuclides	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Bi-214	55.3		39.14		16.1		18.1	pCi/L	0.48	1
Pb-214	74.2		58.89		16.7		16.6	pCi/L	0.46	1

# QC Association Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## GC/MS Semi VOA

### Prep Batch: 257495

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17883-1	MW-7 20160620-01	Total/NA	Water	3510C	
160-17883-2	DUP-GW 20160620-01	Total/NA	Water	3510C	
160-17883-3	MW-6 20160620-01	Total/NA	Water	3510C	
MB 160-257495/1-A	Method Blank	Total/NA	Water	3510C	
LCS 160-257495/2-A	Lab Control Sample	Total/NA	Water	3510C	
160-17883-1 MS	MW-7 20160620-01	Total/NA	Water	3510C	
160-17883-1 MSD	MW-7 20160620-01	Total/NA	Water	3510C	

### Analysis Batch: 259751

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17883-1	MW-7 20160620-01	Total/NA	Water	8270D SIM	257495
160-17883-2	DUP-GW 20160620-01	Total/NA	Water	8270D SIM	257495
160-17883-3	MW-6 20160620-01	Total/NA	Water	8270D SIM	257495
MB 160-257495/1-A	Method Blank	Total/NA	Water	8270D SIM	257495
LCS 160-257495/2-A	Lab Control Sample	Total/NA	Water	8270D SIM	257495
160-17883-1 MS	MW-7 20160620-01	Total/NA	Water	8270D SIM	257495
160-17883-1 MSD	MW-7 20160620-01	Total/NA	Water	8270D SIM	257495

## Specialty Organics

### Prep Batch: 115602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17883-2	DUP-GW 20160620-01	Total/NA	Water	8290	
160-17883-3	MW-6 20160620-01	Total/NA	Water	8290	
MB 320-115602/1-A	Method Blank	Total/NA	Water	8290	
LCS 320-115602/2-A	Lab Control Sample	Total/NA	Water	8290	

### Analysis Batch: 119381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17883-2	DUP-GW 20160620-01	Total/NA	Water	8290A	115602
160-17883-3	MW-6 20160620-01	Total/NA	Water	8290A	115602

### Analysis Batch: 119384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-115602/1-A	Method Blank	Total/NA	Water	8290A	115602
LCS 320-115602/2-A	Lab Control Sample	Total/NA	Water	8290A	115602

## Metals

### Prep Batch: 259572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17883-1	MW-7 20160620-01	Dissolved	Water	3010A	
160-17883-1	MW-7 20160620-01	Total/NA	Water	3010A	
160-17883-2	DUP-GW 20160620-01	Dissolved	Water	3010A	
160-17883-2	DUP-GW 20160620-01	Total/NA	Water	3010A	
160-17883-3	MW-6 20160620-01	Dissolved	Water	3010A	
160-17883-3	MW-6 20160620-01	Total/NA	Water	3010A	
MB 160-259572/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-259572/2-A	Lab Control Sample	Total/NA	Water	3010A	

TestAmerica St. Louis

# QC Association Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## Metals (Continued)

### Analysis Batch: 260702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17883-1	MW-7 20160620-01	Dissolved	Water	6020A	259572
160-17883-1	MW-7 20160620-01	Total/NA	Water	6020A	259572
160-17883-2	DUP-GW 20160620-01	Dissolved	Water	6020A	259572
160-17883-2	DUP-GW 20160620-01	Total/NA	Water	6020A	259572
160-17883-3	MW-6 20160620-01	Dissolved	Water	6020A	259572
160-17883-3	MW-6 20160620-01	Total/NA	Water	6020A	259572
MB 160-259572/1-A	Method Blank	Total/NA	Water	6020A	259572
LCS 160-259572/2-A	Lab Control Sample	Total/NA	Water	6020A	259572

## Rad

### Prep Batch: 257892

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17883-1	MW-7 20160620-01	Total/NA	Water	Evaporation	
160-17883-2	DUP-GW 20160620-01	Total/NA	Water	Evaporation	
160-17883-3	MW-6 20160620-01	Total/NA	Water	Evaporation	
MB 160-257892/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-257892/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-257892/3-A	Lab Control Sample	Total/NA	Water	Evaporation	

### Prep Batch: 257931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17883-1	MW-7 20160620-01	Total/NA	Water	Fill_Geo-0	
160-17883-2	DUP-GW 20160620-01	Total/NA	Water	Fill_Geo-0	
160-17883-3	MW-6 20160620-01	Total/NA	Water	Fill_Geo-0	
MB 160-257931/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-257931/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
160-17883-1 DU	MW-7 20160620-01	Total/NA	Water	Fill_Geo-0	

# Surrogate Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	FBP (10-104)	NBZ (21-110)	TPH (22-103)
160-17883-1	MW-7 20160620-01	56	62	63
160-17883-1 MS	MW-7 20160620-01	71	67	73
160-17883-1 MSD	MW-7 20160620-01	66	61	69
160-17883-2	DUP-GW 20160620-01	54	50	66
160-17883-3	MW-6 20160620-01	72	66	91
LCS 160-257495/2-A	Lab Control Sample	30	39	67
MB 160-257495/1-A	Method Blank	41	59	76

### Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)

NBZ = Nitrobenzene-d5 (Surr)

TPH = Terphenyl-d14 (Surr)

# Isotope Dilution Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17883-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (40-135)	TCDF (40-135)	PeCDD (40-135)	PeCDF1 (40-135)	HxCDD2 (40-135)	HxCDF1 (40-135)	HpCDD (40-135)	HpCDF1 (40-135)
160-17883-2	DUP-GW 20160620-01	76	87	76	84	78	78	74	83
160-17883-3	MW-6 20160620-01	78	86	79	87	85	84	77	86
LCS 320-115602/2-A	Lab Control Sample	78	85	75	82	84	79	72	78
MB 320-115602/1-A	Method Blank	79	87	85	89	81	79	72	78

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OCDD (40-135)
160-17883-2	DUP-GW 20160620-01	62
160-17883-3	MW-6 20160620-01	64
LCS 320-115602/2-A	Lab Control Sample	61
MB 320-115602/1-A	Method Blank	60

#### Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- OCDD = 13C-OCDD



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis  
13715 Rider Trail North  
Earth City, MO 63045  
Tel: (314)298-8566

TestAmerica Job ID: 160-17910-1

Client Project/Site: Former Reid Hospital Site  
Revision: 1

For:

Environmental Resources Management Inc  
8425 Woodfield Crossing Blvd  
Suite 560-W  
Indianapolis, Indiana 46240

Attn: Mr. Aaron Friedrich

*Elizabeth M. Hoerchler*

Authorized for release by:  
9/16/2016 3:50:35 PM

Elizabeth Hoerchler, Project Mgmt. Assistant  
(314)298-8566  
[elizabeth.hoerchler@testamericainc.com](mailto:elizabeth.hoerchler@testamericainc.com)

### LINKS

Review your project  
results through  
**Total Access**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*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.*

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# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

**Job ID: 160-17910-1**

**Laboratory: TestAmerica St. Louis**

**Narrative**

## CASE NARRATIVE

**Client: Environmental Resources Management Inc**

**Project: Former Reid Hospital Site**

**Report Number: 160-17910-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

### **RECEIPT**

The samples were received on 06/22/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.8° C.

### **Receipt Exceptions**

Received sample MW-3 20160620-01 not MW-7 20160620-01 as indicated on the COC. "MW-7" was received on 6-21-16. Sample MW-3 was logged in for all analysis selected for MW-7.

Did not receive dissolved metals bottle for EB-1 20160521-01. Per client email: Sampler accidentally selected dissolved metals. Do not log.

The laboratory only received 250mls for MW-1 20160621-01 for dioxin analysis. COC was accidentally marked for PAH per client email. The sample was cancelled per client, and was re-sampled.

1-LP for EB-1 20160621-01 was received with a pH of 7. The laboratory added nitric acid and pH is now below 2.

# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Job ID: 160-17910-1 (Continued)

### Laboratory: TestAmerica St. Louis (Continued)

#### POLYCHLORINATED BIPHENYLS (PCBS)

Sample MW-5 20160620-01 (160-17910-1) was analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA SW-846 Method 8082. The samples were prepared on 07/21/2016 and analyzed on 07/22/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### SEMIVOLATILE ORGANIC COMPOUNDS-SIM

Samples MW-5 20160620-01 (160-17910-1), MW-8 20160621-01 (160-17910-2), MW-2 20160621-01 (160-17910-3), EB-1 20160621-01 (160-17910-4) and MW-3 20160620-01 (160-17910-6) were analyzed for Semivolatile Organic Compounds-SIM in accordance with EPA SW-846 Method 8270D\_SIM. The samples were prepared on 06/24/2016 and analyzed on 07/11/2016.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 160-257883 and analytical batch 160-259970 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected. MW-8 20160621-01 (160-17910-2[MS]) and MW-8 20160621-01 (160-17910-2[MSD])

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### METALS (ICP/MS)

Samples MW-5 20160620-01 (160-17910-1), MW-8 20160621-01 (160-17910-2), MW-2 20160621-01 (160-17910-3) and MW-3 20160620-01 (160-17910-6) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 07/07/2016 and analyzed on 07/14/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### METALS (ICPMS)

Samples MW-5 20160620-01 (160-17910-1), MW-8 20160621-01 (160-17910-2), MW-2 20160621-01 (160-17910-3), EB-1 20160621-01 (160-17910-4) and MW-3 20160620-01 (160-17910-6) were analyzed for Metals (ICPMS) in accordance with EPA SW-846 Methods 6020A. The samples were prepared on 07/07/2016 and analyzed on 07/14/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GROSS ALPHA AND GROSS BETA RADIOACTIVITY

Samples MW-5 20160620-01 (160-17910-1), MW-8 20160621-01 (160-17910-2), MW-2 20160621-01 (160-17910-3), EB-1 20160621-01 (160-17910-4) and MW-3 20160620-01 (160-17910-6) were analyzed for Gross Alpha and Gross Beta Radioactivity in accordance with USEPA Method 900.0. The samples were prepared on 07/13/2016 and 07/14/2016 and analyzed on 07/18/2016.

The gross alpha detection goal (3.00 pCi/L) and the gross beta detection goal (4.00 pCi/L) were not met for the following samples in batch 160-260315 due to a reduction of the sample size attributed to high residual mass: MW-5 20160620-01 (160-17910-1), MW-8 20160621-01 (160-17910-2), MW-2 20160621-01 (160-17910-3) and MW-3 20160620-01 (160-17910-6). Analytical results are reported with the detection limit achieved.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### CESIUM 137 AND OTHER GAMMA EMITTERS (GS)

Samples MW-5 20160620-01 (160-17910-1), MW-8 20160621-01 (160-17910-2), MW-2 20160621-01 (160-17910-3), EB-1 20160621-01 (160-17910-4) and MW-3 20160620-01 (160-17910-6) were analyzed for Cesium 137 and Other Gamma Emitters (GS) in accordance with USEPA Method 901.1. The samples were prepared on 06/27/2016 and analyzed on 06/29/2016 and 07/01/2016.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### DIOXINS AND FURANS (HRGC/HRMS)

Samples MW-5 20160620-01 (160-17910-1), MW-8 20160621-01 (160-17910-2), MW-2 20160621-01 (160-17910-3), EB-1 20160621-01 (160-17910-4), and MW-3 20160620-01 (160-17910-6) were analyzed for Dioxins and Furans (HRGC/HRMS) in accordance with SW846 8290A. The samples were prepared on 06/27/2016 and 06/28/2016 and analyzed on 07/25/2016 and 07/26/2016.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

>>> Select a Laboratory <<<

# Chain of Custody Record

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica  
13715 Rider Trail North  
Earth City, MO 63045

Regulatory Program:  DW  NPDES  RCRA  Other:

TestAmerica Laboratories, Inc.

Client Contact		Project Manager: Michael Franks		Site Contact: Chris Burrows		Date:		COC No:											
ERM		Tel/Fax:		Lab Contact:		Carrier:		of COCs											
8425 Woodfield Crossing Suite 560 W		Analysis Turnaround Time		Filtered Sample (Y/N) Perform MS/MSD (Y/N) Select Metals Select Metals Field Filter Radionuclides Gross Alpha/Beta PAHs Dioxins PCBs				Sampler: For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.: Sample Specific Notes:											
Indianapolis, IN 46240		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS																	
(317) 706-2000 Phone		TAT if different from Below																	
(317) 706-2010 FAX		<input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day																	
Project Name: Former Reid Hospital																			
Site: 1401 Chester Blvd, Richmond, IN																			
P O # 0315592																			
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.														
MW-5 20160620-01	6-20-16	1315	G	WT	11	X	X	X	X	X	X								
MW-7 20160620-01	6-20-16	1650		WT	9	X	X	X	X	X	X								
MW-8 20160621-01	6-21-16	1058		WT	16	X	X	X	X	X	X								
MW-2 20160621-01	6-21-16	1005		WT	8	X	X	X	X	X	X								
EB-1 20160621-01	6-21-16	1345		WT	8	X	X	X	X	X	X								
MW-1 20160621-01	6-21-16	1500	↓	WT	1						X								well went dry - analyze for dioxins if possible
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.										Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)									
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown										<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months									
Special Instructions/QC Requirements & Comments: * Metals include Arsenic, Chromium, Thallium & Lithium. Note: Samples on this COC were shipped in 6 coolers, custody seals are numbered 1 through 6																			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No					Custody Seal No.:					Cooler Temp. (°C): Obs'd: _____ Corr'd: _____					Therm ID No.:				
Relinquished by: <i>Chris Burrows</i>					Company: ERM					Date/Time: 6/21/16 0915					Received by: <i>Joe Clarke</i>				
Relinquished by:					Company:					Date/Time:					Received by:				
Relinquished by:					Company:					Date/Time:					Received in Laboratory by:				



160-17910 Chain of Custody

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9/16/2016





>>> Select a Laboratory <<<

TestAmerica  
13715 Rider Trail North  
Earth City, MO 63045

# Chain of Custody Record

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program:  DW  NPDES  RCRA  Other:

TestAmerica Laboratories, Inc.

Client Contact		Project Manager: Michael Franks			Site Contact: Chris Burrows			Date:		COC No:	
ERM		Tel/Fax:			Lab Contact:			Carrier:		↓ of ↓ COCs	
8425 Woodfield Crossing Suite 560 W		Analysis Turnaround Time			Filtered Sample (Y/N) Perform MS / MSD (Y/N) Select Metals Select Metals Field Filter Radionuclides Gross Alpha/Beta PAHs Dioxins PCBs					Sampler:	
Indianapolis, IN 46240		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS								For Lab Use Only:	
(317) 706-2000 Phone		TAT if different from Below _____								Walk-in Client:	
(317) 706-2010 FAX		<input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day								Lab Sampling:	
Project Name: Former Reid Hospital										Job / SDG No.:	
Site: 1401 Chester Blvd, Richmond, IN											
P O # 0315592											
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sample Specific Notes:				
MW-5 20160620-01		6-20-16	1315	G	WT	11					
* MW-7 20160620-01		6-20-16	1650	G	WT	9					
MW-8 20160621-01		6-21-16	1058	G	WT	16					
MW-2 20160621-01		6-21-16	1005	G	WT	8					
EB-1 20160621-01		6-21-16	1345	G	WT	8					
MW-1 20160621-01		6-21-16	1500	G	WT	1	Well went dry - analyze for dioxins if possible				
Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other											
Possible Hazard Identification:						Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)					
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.						<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months					
<input type="checkbox"/> Non-Hazardous <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown											
Special Instructions/QC Requirements & Comments: * Metals include Arsenic, Chromium, Thallium & Lithium. * Corrections made per client communication Note: Samples on this COC were shipped in 6 coolers, custody seals are numbered 1 through 6 on 6/22/16											
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:			Cooler Temp. (°C): Obs'd: _____		Corr'd: _____		Therm ID No.:		
Relinquished by: <i>Chris Burrows</i>		Company: ERM		Date/Time: 6-21/1600		Received by: <i>Del Clark</i>		Company: TASA		Date/Time: 6-22-16 0915	
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:	

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160-17910 Chain of Custody



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34 RITZ EXP 03/17

ORIGIN ID:ALNA (314) 298-8566  
 BRIAN DANIELS  
 TEST AMERICA  
 13715 RIDER TRAIL NORTH

SHIP DATE: 20JUL16  
 ACTWGT: 31.0 LB  
 CAD: 486221/CAFE2912

EARTH CITY, MO 63045  
 UNITED STATES US

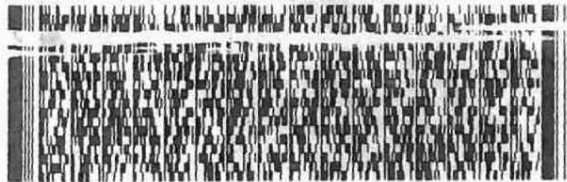
BILL RECIPIENT

862E/8BDS/128E5

TO **SHIPPING/RECEIVING**  
**TESTAMERICA LABORATORIES, INC.**  
**301 ALPHA DRIVE**

**PITTSBURGH PA 15238**

(412) 963-7068  
 REF: S160-4388



THU - 21 JUL 10:30A  
 PRIORITY OVER

TRK# 5399 0213 5292  
 0201

**NA AGCA**

15238  
 PA-US PIT

Uncorrected temp  
 Thermometer ID 8.5 °C  
 CF 0 Initials cul

PT-WI-SR-001 effective 7/26/13



160-17910 Waybill



**TestAmerica St. Louis**

13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

**Chain of Custody Record**



160-17910 Chain of Custody



<b>Client Information (Sub Contract Lab)</b>				Sampler:		Lab PM:					Page: .d.1			
Client Contact: Shipping/Receiving				Phone:		Hoerchler, Elizabeth M					Page 1 of 1			
Company: TestAmerica Laboratories, Inc.						<b>Analysis Requested</b>					Job #: 160-17910-1			
Address: 301 Alpha Drive, RIDC Park,				Due Date Requested: 7/15/2016		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 8082_LL0510C_LL Standard List					Total Number of containers 2		<b>Preservation Codes:</b> A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchler S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify)	
City: Pittsburgh				TAT Requested (days):									Other:	
State, Zip: PA, 15238				PO #:										
Phone: 412-963-7058(Tel) 412-963-2468(Fax)				WO #:										
Email:				Project #: 16005365										
Project Name: Former Reid Hospital Site				SSOW#:										
Site:														
<b>Sample Identification - Client ID (Lab ID)</b>				<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type (C=comp, G=grab)</b>	<b>Matrix (W=water, S=solid, O=waste/oli, BT=Tissue, A=Air)</b>						<b>Special Instructions/Note:</b>	
MW-5 20160620-01 (160-17910-1)				6/20/16	13:15 Eastern		Water	X					2	
Possible Hazard Identification				Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)										
Level 1 radioactive				<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months										
Deliverable Requested: I, II, III, IV, Other (specify)				Primary Deliverable Rank: 2				Special Instructions/QC Requirements:						
Empty Kit Relinquished by:				Date:		Time:			Method of Shipment:					
Relinquished by: <i>Ill Clarke</i>				Date/Time: 7-20-16 1700		Company:			Received by: <i>WOS</i>			Date/Time: 7/21/16 0850		Company: <i>WOS</i>
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:									





**TestAmerica St. Louis**

13715 Rider Trail North  
 Earth City, MO 63045  
 Phone (314) 298-8566 Fax (314) 298-8757

**Chain of Custody Record**



**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information (Sub Contract Lab)</b>				Sampler:	Lab PM:	Carrier Tracking No(s):				COC No:		
Client Contact:				Phone:	Hoerchler, Elizabeth M					160-87597.1		
Shipping/Receiving				E-Mail:				Page:				
Company:				elizabeth.hoerchler@testamericainc.com				Page 1 of 1				
TestAmerica Laboratories, Inc.				<b>Analysis Requested</b>							Job #:	
Address:				Due Date Requested:				160-17910-1				
880 Riverside Parkway,				7/15/2016								
City:				TAT Requested (days):				Preservation Codes:				
West Sacramento								A - HCL M - Hexane				
State, Zip:				PO #:				B - NaOH N - None				
CA, 95605								C - Zn Acetate O - AsNaO2				
Phone:				WO #:				D - Nitric Acid P - Na2O4S				
916-373-5600(Tel) 916-372-1059(Fax)								E - NaHSO4 Q - Na2SO3				
Email:				Project #:				F - MeOH R - Na2S2O3				
				16005365				G - Amchlor S - H2SO4				
Project Name:				SSOW#:				H - Ascorbic Acid T - TSP Dodecahydrate				
Former Reid Hospital Site								I - Ice U - Acetone				
Site:				Field Filtered Sample (Yes or No)				J - DI Water V - MCAA				
				Perform MS/MSD (Yes or No)				K - EDTA W - ph 4-5				
				8290A/8290_P_Sep 17 Isomers List				L - EDA Z - other (specify)				
				Total Number of containers				Other:				
<b>Sample Identification - Client ID (Lab ID)</b>				<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type (C=comp, G=grab)</b>	<b>Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)</b>					<b>Special Instructions/Note:</b>
MW-5 20160620-01 (160-17910-1)				6/20/16	13:15 Eastern		Water	X				2
MW-8 20160621-01 (160-17910-2)				6/21/16	10:58 Eastern		Water	X				2
MW-8 20160621-01 (160-17910-2MS)				6/21/16	10:58 Eastern	MS	Water	X				1
MW-8 20160621-01 (160-17910-2MSD)				6/21/16	10:58 Eastern	MSD	Water	X				1
MW-2 20160621-01 (160-17910-3)				6/21/16	10:05 Eastern		Water	X				2
EB-1 20160621-01 (160-17910-4)				6/21/16	13:45 Eastern		Water	X				2
MW-1 20160621-01 (160-17910-5)				6/21/16	15:00 Eastern		Water	X				1
MW-3 20160620-01 (160-17910-6)				6/20/16	17:40 Eastern		Water	X				2
<b>Possible Hazard Identification</b>				<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>								
Level 1 radioactive, Unconfirmed				<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> 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: <i>[Signature]</i>				Date/Time: 6/23/16 1700	Company: <i>[Signature]</i>	Received by: <i>[Signature]</i>				Date/Time: 6/24/16 0935	Company: <i>[Signature]</i>	
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: 0.9								

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9/16/2016



# Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 160-17910-1

**Login Number: 17910**  
**List Number: 1**  
**Creator: Daniels, Brian J**

**List Source: TestAmerica St. Louis**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
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?	N/A	
There are no discrepancies between the containers received and the COC.	False	Sample ID on CoC and container did not agree. Corrections made per client communication on 6/22/2016.
Samples are received within Holding Time (excluding tests with immediate HTs)	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.	False	
Sample Preservation Verified.	True	Sample 160-17910-5 was received unpreserved. Nitric was added to adjust pH to <2
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	

# Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 160-17910-1

**Login Number: 17910**  
**List Number: 3**  
**Creator: Davis, Ellen G**

**List Source: TestAmerica Pittsburgh**  
**List Creation: 07/21/16 10:46 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 160-17910-1

**Login Number: 17910**  
**List Number: 2**  
**Creator: Shockley, Wesley S**

**List Source: TestAmerica Sacramento**  
**List Creation: 06/24/16 06:06 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Definitions/Glossary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits

### GC Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.

### Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

## Glossary

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

# Method Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

Method	Method Description	Protocol	Laboratory
8270D SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SL
8082	Polychlorinated Biphenyls (PCBs) (GC)	SW846	TAL PIT
8290A	Dioxins and Furans (HRGC/HRMS)	SW846	TAL SAC
6020A	Metals (ICP/MS)	SW846	TAL SL
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
Local Method	General Sub Contract Method	NONE	TAL RCH

#### Protocol References:

EPA = US Environmental Protection Agency

NONE = NONE

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

#### Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Sample Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-17910-1	MW-5 20160620-01	Water	06/20/16 13:15	06/22/16 16:12
160-17910-2	MW-8 20160621-01	Water	06/21/16 10:58	06/22/16 16:12
160-17910-3	MW-2 20160621-01	Water	06/21/16 10:05	06/22/16 16:12
160-17910-4	EB-1 20160621-01	Water	06/21/16 13:45	06/22/16 16:12
160-17910-6	MW-3 20160620-01	Water	06/20/16 17:40	06/22/16 16:12

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13



# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

**Client Sample ID: MW-5 20160620-01**

**Lab Sample ID: 160-17910-1**

**Date Collected: 06/20/16 13:15**

**Matrix: Water**

**Date Received: 06/22/16 16:12**

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.19	0.048	ug/L		06/24/16 09:53	07/11/16 14:05	1
2-Methylnaphthalene	ND		0.19	0.029	ug/L		06/24/16 09:53	07/11/16 14:05	1
Acenaphthene	ND		0.19	0.033	ug/L		06/24/16 09:53	07/11/16 14:05	1
Acenaphthylene	ND		0.19	0.036	ug/L		06/24/16 09:53	07/11/16 14:05	1
Anthracene	ND		0.19	0.037	ug/L		06/24/16 09:53	07/11/16 14:05	1
Benzo[a]anthracene	ND		0.19	0.030	ug/L		06/24/16 09:53	07/11/16 14:05	1
Benzo[a]pyrene	ND		0.19	0.051	ug/L		06/24/16 09:53	07/11/16 14:05	1
Benzo[b]fluoranthene	ND		0.19	0.052	ug/L		06/24/16 09:53	07/11/16 14:05	1
Benzo[g,h,i]perylene	ND		0.19	0.038	ug/L		06/24/16 09:53	07/11/16 14:05	1
Benzo[k]fluoranthene	ND		0.19	0.070	ug/L		06/24/16 09:53	07/11/16 14:05	1
Chrysene	ND		0.19	0.037	ug/L		06/24/16 09:53	07/11/16 14:05	1
Dibenz(a,h)anthracene	ND		0.19	0.044	ug/L		06/24/16 09:53	07/11/16 14:05	1
<b>Fluoranthene</b>	<b>0.034</b>	<b>J</b>	0.19	0.032	ug/L		06/24/16 09:53	07/11/16 14:05	1
Fluorene	ND		0.19	0.031	ug/L		06/24/16 09:53	07/11/16 14:05	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.038	ug/L		06/24/16 09:53	07/11/16 14:05	1
Naphthalene	ND		0.19	0.065	ug/L		06/24/16 09:53	07/11/16 14:05	1
<b>Phenanthrene</b>	<b>0.11</b>	<b>J</b>	0.19	0.062	ug/L		06/24/16 09:53	07/11/16 14:05	1
Pyrene	ND		0.19	0.035	ug/L		06/24/16 09:53	07/11/16 14:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	64		10 - 104				06/24/16 09:53	07/11/16 14:05	1
Nitrobenzene-d5 (Surr)	62		21 - 110				06/24/16 09:53	07/11/16 14:05	1
Terphenyl-d14 (Surr)	73		22 - 103				06/24/16 09:53	07/11/16 14:05	1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND	*	0.0094	0.0035	ug/L		07/21/16 10:53	07/22/16 04:47	1
PCB-1221	ND		0.0094	0.0055	ug/L		07/21/16 10:53	07/22/16 04:47	1
PCB-1232	ND		0.0094	0.0057	ug/L		07/21/16 10:53	07/22/16 04:47	1
PCB-1242	ND		0.0094	0.0032	ug/L		07/21/16 10:53	07/22/16 04:47	1
PCB-1248	ND		0.0094	0.0030	ug/L		07/21/16 10:53	07/22/16 04:47	1
PCB-1254	ND		0.0094	0.0042	ug/L		07/21/16 10:53	07/22/16 04:47	1
PCB-1260	ND		0.0094	0.0027	ug/L		07/21/16 10:53	07/22/16 04:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	119		16 - 150				07/21/16 10:53	07/22/16 04:47	1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.5	0.18	pg/L		06/27/16 15:03	07/26/16 00:45	1
2,3,7,8-TCDF	ND		9.5	0.11	pg/L		06/27/16 15:03	07/26/16 00:45	1
1,2,3,7,8-PeCDD	ND		48	0.23	pg/L		06/27/16 15:03	07/26/16 00:45	1
1,2,3,7,8-PeCDF	ND		48	0.17	pg/L		06/27/16 15:03	07/26/16 00:45	1
2,3,4,7,8-PeCDF	ND		48	0.18	pg/L		06/27/16 15:03	07/26/16 00:45	1
<b>1,2,3,4,7,8-HxCDD</b>	<b>0.15</b>	<b>J q</b>	48	0.14	pg/L		06/27/16 15:03	07/26/16 00:45	1
<b>1,2,3,6,7,8-HxCDD</b>	<b>0.25</b>	<b>J q</b>	48	0.12	pg/L		06/27/16 15:03	07/26/16 00:45	1
<b>1,2,3,7,8,9-HxCDD</b>	<b>0.34</b>	<b>J B</b>	48	0.11	pg/L		06/27/16 15:03	07/26/16 00:45	1
<b>1,2,3,4,7,8-HxCDF</b>	<b>0.30</b>	<b>J</b>	48	0.14	pg/L		06/27/16 15:03	07/26/16 00:45	1
<b>1,2,3,6,7,8-HxCDF</b>	<b>0.28</b>	<b>J</b>	48	0.13	pg/L		06/27/16 15:03	07/26/16 00:45	1
1,2,3,7,8,9-HxCDF	ND		48	0.14	pg/L		06/27/16 15:03	07/26/16 00:45	1

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

**Client Sample ID: MW-5 20160620-01**

**Lab Sample ID: 160-17910-1**

Date Collected: 06/20/16 13:15

Matrix: Water

Date Received: 06/22/16 16:12

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,6,7,8-HxCDF	ND		48	0.14	pg/L		06/27/16 15:03	07/26/16 00:45	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.69</b>	<b>J B</b>	48	0.13	pg/L		06/27/16 15:03	07/26/16 00:45	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.44</b>	<b>J q B</b>	48	0.11	pg/L		06/27/16 15:03	07/26/16 00:45	1
<b>1,2,3,4,7,8,9-HpCDF</b>	<b>0.35</b>	<b>J q</b>	48	0.13	pg/L		06/27/16 15:03	07/26/16 00:45	1
<b>OCDD</b>	<b>2.7</b>	<b>J B</b>	95	0.24	pg/L		06/27/16 15:03	07/26/16 00:45	1
<b>OCDF</b>	<b>1.8</b>	<b>J B</b>	95	0.18	pg/L		06/27/16 15:03	07/26/16 00:45	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	81		40 - 135				06/27/16 15:03	07/26/16 00:45	1
13C-2,3,7,8-TCDF	87		40 - 135				06/27/16 15:03	07/26/16 00:45	1
13C-1,2,3,7,8-PeCDD	81		40 - 135				06/27/16 15:03	07/26/16 00:45	1
13C-1,2,3,7,8-PeCDF	88		40 - 135				06/27/16 15:03	07/26/16 00:45	1
13C-1,2,3,6,7,8-HxCDD	84		40 - 135				06/27/16 15:03	07/26/16 00:45	1
13C-1,2,3,4,7,8-HxCDF	85		40 - 135				06/27/16 15:03	07/26/16 00:45	1
13C-1,2,3,4,6,7,8-HpCDD	80		40 - 135				06/27/16 15:03	07/26/16 00:45	1
13C-1,2,3,4,6,7,8-HpCDF	88		40 - 135				06/27/16 15:03	07/26/16 00:45	1
13C-OCDD	68		40 - 135				06/27/16 15:03	07/26/16 00:45	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>19</b>		10	1.2	ug/L		07/07/16 12:43	07/14/16 20:53	2
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 20:53	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 20:53	2
<b>Lithium</b>	<b>54</b>		5.0	1.1	ug/L		07/07/16 12:43	07/14/16 20:53	2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>19</b>		10	1.2	ug/L		07/07/16 12:43	07/14/16 19:26	2
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 19:26	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 19:26	2
<b>Lithium</b>	<b>54</b>		5.0	1.1	ug/L		07/07/16 12:43	07/14/16 19:26	2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	-3.16	U G	5.96	5.97	3.00	14.1	pCi/L	07/13/16 09:22	07/18/16 13:26	1
<b>Gross Beta</b>	<b>16.7</b>	<b>G</b>	5.75	5.99	4.00	7.64	pCi/L	07/13/16 09:22	07/18/16 13:26	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-12.9	U	8.02	8.16		23.1	pCi/L	06/27/16 15:24	07/01/16 17:26	1
Cesium-137	-0.755	U	6.00	6.00	20.0	10.4	pCi/L	06/27/16 15:24	07/01/16 17:26	1
Cobalt-60	-2.14	U	8.29	8.29		10.2	pCi/L	06/27/16 15:24	07/01/16 17:26	1
Other Detected Radionuclides	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide	None		Uncert.	Uncert.			pCi/L	06/27/16 15:24	07/01/16 17:26	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

**Client Sample ID: MW-8 20160621-01**

**Lab Sample ID: 160-17910-2**

Date Collected: 06/21/16 10:58

Matrix: Water

Date Received: 06/22/16 16:12

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.19	0.048	ug/L		06/24/16 09:53	07/11/16 14:39	1
2-Methylnaphthalene	ND		0.19	0.029	ug/L		06/24/16 09:53	07/11/16 14:39	1
Acenaphthene	ND		0.19	0.034	ug/L		06/24/16 09:53	07/11/16 14:39	1
Acenaphthylene	ND		0.19	0.037	ug/L		06/24/16 09:53	07/11/16 14:39	1
Anthracene	ND		0.19	0.038	ug/L		06/24/16 09:53	07/11/16 14:39	1
Benzo[a]anthracene	ND		0.19	0.030	ug/L		06/24/16 09:53	07/11/16 14:39	1
Benzo[a]pyrene	ND	F1	0.19	0.051	ug/L		06/24/16 09:53	07/11/16 14:39	1
Benzo[b]fluoranthene	ND	F1	0.19	0.053	ug/L		06/24/16 09:53	07/11/16 14:39	1
Benzo[g,h,i]perylene	ND	F1	0.19	0.039	ug/L		06/24/16 09:53	07/11/16 14:39	1
Benzo[k]fluoranthene	ND		0.19	0.071	ug/L		06/24/16 09:53	07/11/16 14:39	1
Chrysene	ND		0.19	0.038	ug/L		06/24/16 09:53	07/11/16 14:39	1
Dibenz(a,h)anthracene	ND	F1 F2	0.19	0.045	ug/L		06/24/16 09:53	07/11/16 14:39	1
Fluoranthene	ND		0.19	0.033	ug/L		06/24/16 09:53	07/11/16 14:39	1
Fluorene	ND		0.19	0.031	ug/L		06/24/16 09:53	07/11/16 14:39	1
Indeno[1,2,3-cd]pyrene	ND	F1	0.19	0.039	ug/L		06/24/16 09:53	07/11/16 14:39	1
Naphthalene	ND		0.19	0.066	ug/L		06/24/16 09:53	07/11/16 14:39	1
<b>Phenanthrene</b>	<b>0.084</b>	<b>J</b>	0.19	0.063	ug/L		06/24/16 09:53	07/11/16 14:39	1
Pyrene	ND		0.19	0.036	ug/L		06/24/16 09:53	07/11/16 14:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	76		10 - 104	06/24/16 09:53	07/11/16 14:39	1
Nitrobenzene-d5 (Surr)	71		21 - 110	06/24/16 09:53	07/11/16 14:39	1
Terphenyl-d14 (Surr)	84		22 - 103	06/24/16 09:53	07/11/16 14:39	1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.7	0.24	pg/L		06/27/16 15:03	07/26/16 01:31	1
2,3,7,8-TCDF	ND		9.7	0.13	pg/L		06/27/16 15:03	07/26/16 01:31	1
1,2,3,7,8-PeCDD	ND		49	0.23	pg/L		06/27/16 15:03	07/26/16 01:31	1
1,2,3,7,8-PeCDF	ND		49	0.20	pg/L		06/27/16 15:03	07/26/16 01:31	1
2,3,4,7,8-PeCDF	ND		49	0.21	pg/L		06/27/16 15:03	07/26/16 01:31	1
1,2,3,4,7,8-HxCDD	ND		49	0.13	pg/L		06/27/16 15:03	07/26/16 01:31	1
1,2,3,6,7,8-HxCDD	ND		49	0.12	pg/L		06/27/16 15:03	07/26/16 01:31	1
1,2,3,7,8,9-HxCDD	ND		49	0.10	pg/L		06/27/16 15:03	07/26/16 01:31	1
<b>1,2,3,4,7,8-HxCDF</b>	<b>0.24</b>	<b>J</b>	49	0.15	pg/L		06/27/16 15:03	07/26/16 01:31	1
1,2,3,6,7,8-HxCDF	ND		49	0.14	pg/L		06/27/16 15:03	07/26/16 01:31	1
1,2,3,7,8,9-HxCDF	ND		49	0.15	pg/L		06/27/16 15:03	07/26/16 01:31	1
2,3,4,6,7,8-HxCDF	ND		49	0.15	pg/L		06/27/16 15:03	07/26/16 01:31	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.61</b>	<b>J B</b>	49	0.14	pg/L		06/27/16 15:03	07/26/16 01:31	1
1,2,3,4,6,7,8-HpCDF	ND		49	0.14	pg/L		06/27/16 15:03	07/26/16 01:31	1
1,2,3,4,7,8,9-HpCDF	ND		49	0.17	pg/L		06/27/16 15:03	07/26/16 01:31	1
<b>OCDD</b>	<b>2.6</b>	<b>J B</b>	97	0.31	pg/L		06/27/16 15:03	07/26/16 01:31	1
<b>OCDF</b>	<b>0.85</b>	<b>J B q</b>	97	0.18	pg/L		06/27/16 15:03	07/26/16 01:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	77		40 - 135	06/27/16 15:03	07/26/16 01:31	1
13C-2,3,7,8-TCDF	86		40 - 135	06/27/16 15:03	07/26/16 01:31	1
13C-1,2,3,7,8-PeCDD	82		40 - 135	06/27/16 15:03	07/26/16 01:31	1
13C-1,2,3,7,8-PeCDF	87		40 - 135	06/27/16 15:03	07/26/16 01:31	1
13C-1,2,3,6,7,8-HxCDD	82		40 - 135	06/27/16 15:03	07/26/16 01:31	1
13C-1,2,3,4,7,8-HxCDF	79		40 - 135	06/27/16 15:03	07/26/16 01:31	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

**Client Sample ID: MW-8 20160621-01**

**Lab Sample ID: 160-17910-2**

Date Collected: 06/21/16 10:58

Matrix: Water

Date Received: 06/22/16 16:12

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	77		40 - 135	06/27/16 15:03	07/26/16 01:31	1
13C-1,2,3,4,6,7,8-HpCDF	84		40 - 135	06/27/16 15:03	07/26/16 01:31	1
13C-OCDD	66		40 - 135	06/27/16 15:03	07/26/16 01:31	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	15		10	1.2	ug/L		07/07/16 12:43	07/14/16 21:00	2
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 21:00	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 21:00	2
Lithium	2.2	J	5.0	1.1	ug/L		07/07/16 12:43	07/14/16 21:00	2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	15		10	1.2	ug/L		07/07/16 12:43	07/14/16 19:33	2
Chromium	1.1	J	10	1.0	ug/L		07/07/16 12:43	07/14/16 19:33	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 19:33	2
Lithium	2.1	J	5.0	1.1	ug/L		07/07/16 12:43	07/14/16 19:33	2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	0.791	U G	3.69	3.69	3.00	7.08	pCi/L	07/13/16 09:22	07/18/16 13:26	1
Gross Beta	1.50	U G	2.71	2.71	4.00	4.57	pCi/L	07/13/16 09:22	07/18/16 13:26	1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-6.70	U	16.9	16.9		23.0	pCi/L	06/27/16 15:24	06/29/16 17:38	1
Cesium-137	3.32	U	9.75	9.75	20.0	17.1	pCi/L	06/27/16 15:24	06/29/16 17:38	1
Cobalt-60	-9.18	U	14.6	14.7		23.4	pCi/L	06/27/16 15:24	06/29/16 17:38	1

Other Detected Radionuclides		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Result	Qualifier	Uncert.	Uncert.						
		(2σ+/-)	(2σ+/-)						
Pb-214	40.8		16.2	16.7	15.2	pCi/L	06/27/16 15:24	06/29/16 17:38	1

**Client Sample ID: MW-2 20160621-01**

**Lab Sample ID: 160-17910-3**

Date Collected: 06/21/16 10:05

Matrix: Water

Date Received: 06/22/16 16:12

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.19	0.048	ug/L		06/24/16 09:53	07/11/16 16:21	1
2-Methylnaphthalene	ND		0.19	0.029	ug/L		06/24/16 09:53	07/11/16 16:21	1
Acenaphthene	ND		0.19	0.033	ug/L		06/24/16 09:53	07/11/16 16:21	1
Acenaphthylene	ND		0.19	0.036	ug/L		06/24/16 09:53	07/11/16 16:21	1
Anthracene	ND		0.19	0.037	ug/L		06/24/16 09:53	07/11/16 16:21	1
Benzo[a]anthracene	ND		0.19	0.030	ug/L		06/24/16 09:53	07/11/16 16:21	1
Benzo[a]pyrene	ND		0.19	0.051	ug/L		06/24/16 09:53	07/11/16 16:21	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

**Client Sample ID: MW-2 20160621-01**

**Lab Sample ID: 160-17910-3**

Date Collected: 06/21/16 10:05

Matrix: Water

Date Received: 06/22/16 16:12

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[b]fluoranthene	ND		0.19	0.053	ug/L		06/24/16 09:53	07/11/16 16:21	1
Benzo[g,h,i]perylene	ND		0.19	0.038	ug/L		06/24/16 09:53	07/11/16 16:21	1
Benzo[k]fluoranthene	ND		0.19	0.070	ug/L		06/24/16 09:53	07/11/16 16:21	1
Chrysene	ND		0.19	0.037	ug/L		06/24/16 09:53	07/11/16 16:21	1
Dibenz(a,h)anthracene	ND		0.19	0.044	ug/L		06/24/16 09:53	07/11/16 16:21	1
<b>Fluoranthene</b>	<b>0.037</b>	<b>J</b>	0.19	0.032	ug/L		06/24/16 09:53	07/11/16 16:21	1
<b>Fluorene</b>	<b>0.063</b>	<b>J</b>	0.19	0.031	ug/L		06/24/16 09:53	07/11/16 16:21	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.038	ug/L		06/24/16 09:53	07/11/16 16:21	1
Naphthalene	ND		0.19	0.065	ug/L		06/24/16 09:53	07/11/16 16:21	1
<b>Phenanthrene</b>	<b>0.13</b>	<b>J</b>	0.19	0.062	ug/L		06/24/16 09:53	07/11/16 16:21	1
Pyrene	ND		0.19	0.035	ug/L		06/24/16 09:53	07/11/16 16:21	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2-Fluorobiphenyl (Surr)	60		10 - 104				06/24/16 09:53	07/11/16 16:21	1
Nitrobenzene-d5 (Surr)	52		21 - 110				06/24/16 09:53	07/11/16 16:21	1
Terphenyl-d14 (Surr)	71		22 - 103				06/24/16 09:53	07/11/16 16:21	1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.6	0.23	pg/L		06/27/16 15:03	07/26/16 03:48	1
2,3,7,8-TCDF	ND		9.6	0.11	pg/L		06/27/16 15:03	07/26/16 03:48	1
1,2,3,7,8-PeCDD	ND		48	0.25	pg/L		06/27/16 15:03	07/26/16 03:48	1
1,2,3,7,8-PeCDF	ND		48	0.18	pg/L		06/27/16 15:03	07/26/16 03:48	1
2,3,4,7,8-PeCDF	ND		48	0.19	pg/L		06/27/16 15:03	07/26/16 03:48	1
1,2,3,4,7,8-HxCDD	ND		48	0.15	pg/L		06/27/16 15:03	07/26/16 03:48	1
<b>1,2,3,6,7,8-HxCDD</b>	<b>0.41</b>	<b>J</b>	48	0.13	pg/L		06/27/16 15:03	07/26/16 03:48	1
<b>1,2,3,7,8,9-HxCDD</b>	<b>0.44</b>	<b>J B q</b>	48	0.11	pg/L		06/27/16 15:03	07/26/16 03:48	1
<b>1,2,3,4,7,8-HxCDF</b>	<b>0.37</b>	<b>J</b>	48	0.14	pg/L		06/27/16 15:03	07/26/16 03:48	1
<b>1,2,3,6,7,8-HxCDF</b>	<b>0.23</b>	<b>J q</b>	48	0.12	pg/L		06/27/16 15:03	07/26/16 03:48	1
<b>1,2,3,7,8,9-HxCDF</b>	<b>0.33</b>	<b>J</b>	48	0.13	pg/L		06/27/16 15:03	07/26/16 03:48	1
2,3,4,6,7,8-HxCDF	ND		48	0.13	pg/L		06/27/16 15:03	07/26/16 03:48	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.84</b>	<b>J B q</b>	48	0.14	pg/L		06/27/16 15:03	07/26/16 03:48	1
1,2,3,4,6,7,8-HpCDF	ND		48	0.13	pg/L		06/27/16 15:03	07/26/16 03:48	1
<b>1,2,3,4,7,8,9-HpCDF</b>	<b>0.41</b>	<b>J</b>	48	0.15	pg/L		06/27/16 15:03	07/26/16 03:48	1
<b>OCDD</b>	<b>2.9</b>	<b>J B q</b>	96	0.26	pg/L		06/27/16 15:03	07/26/16 03:48	1
<b>OCDF</b>	<b>1.1</b>	<b>J B</b>	96	0.18	pg/L		06/27/16 15:03	07/26/16 03:48	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C-2,3,7,8-TCDD	78		40 - 135				06/27/16 15:03	07/26/16 03:48	1
13C-2,3,7,8-TCDF	87		40 - 135				06/27/16 15:03	07/26/16 03:48	1
13C-1,2,3,7,8-PeCDD	80		40 - 135				06/27/16 15:03	07/26/16 03:48	1
13C-1,2,3,7,8-PeCDF	88		40 - 135				06/27/16 15:03	07/26/16 03:48	1
13C-1,2,3,6,7,8-HxCDD	85		40 - 135				06/27/16 15:03	07/26/16 03:48	1
13C-1,2,3,4,7,8-HxCDF	84		40 - 135				06/27/16 15:03	07/26/16 03:48	1
13C-1,2,3,4,6,7,8-HpCDD	78		40 - 135				06/27/16 15:03	07/26/16 03:48	1
13C-1,2,3,4,6,7,8-HpCDF	83		40 - 135				06/27/16 15:03	07/26/16 03:48	1
13C-OCDD	67		40 - 135				06/27/16 15:03	07/26/16 03:48	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>11</b>		10	1.2	ug/L		07/07/16 12:43	07/14/16 21:40	2

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

**Client Sample ID: MW-2 20160621-01**

**Lab Sample ID: 160-17910-3**

Date Collected: 06/21/16 10:05

Matrix: Water

Date Received: 06/22/16 16:12

### Method: 6020A - Metals (ICP/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 21:40	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 21:40	2
<b>Lithium</b>	<b>1.8</b>	<b>J</b>	5.0	1.1	ug/L		07/07/16 12:43	07/14/16 21:40	2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>11</b>		10	1.2	ug/L		07/07/16 12:43	07/14/16 20:20	2
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 20:20	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 20:20	2
<b>Lithium</b>	<b>1.6</b>	<b>J</b>	5.0	1.1	ug/L		07/07/16 12:43	07/14/16 20:20	2

### Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
Gross Alpha	1.21	U G	5.40	5.40	3.00	9.86	pCi/L	07/13/16 09:22	07/18/16 13:25	1
<b>Gross Beta</b>	<b>25.8</b>	<b>G</b>	4.18	4.91	4.00	4.33	pCi/L	07/13/16 09:22	07/18/16 13:25	1

### Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
Americium-241	4.76	U	16.1	16.1		22.1	pCi/L	06/27/16 15:24	06/29/16 18:46	1
Cesium-137	3.23	U	8.60	8.60	20.0	15.1	pCi/L	06/27/16 15:24	06/29/16 18:46	1
Cobalt-60	-2.57	U	13.7	13.7		18.7	pCi/L	06/27/16 15:24	06/29/16 18:46	1

#### Other Detected

Radionuclides	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
Pb-214	52.0		14.9	15.8		14.3	pCi/L	06/27/16 15:24	06/29/16 18:46	1

**Client Sample ID: EB-1 20160621-01**

**Lab Sample ID: 160-17910-4**

Date Collected: 06/21/16 13:45

Matrix: Water

Date Received: 06/22/16 16:12

### Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.19	0.048	ug/L		06/24/16 09:53	07/11/16 16:55	1
2-Methylnaphthalene	ND		0.19	0.029	ug/L		06/24/16 09:53	07/11/16 16:55	1
Acenaphthene	ND		0.19	0.033	ug/L		06/24/16 09:53	07/11/16 16:55	1
Acenaphthylene	ND		0.19	0.036	ug/L		06/24/16 09:53	07/11/16 16:55	1
Anthracene	ND		0.19	0.037	ug/L		06/24/16 09:53	07/11/16 16:55	1
Benzo[a]anthracene	ND		0.19	0.029	ug/L		06/24/16 09:53	07/11/16 16:55	1
Benzo[a]pyrene	ND		0.19	0.050	ug/L		06/24/16 09:53	07/11/16 16:55	1
Benzo[b]fluoranthene	ND		0.19	0.052	ug/L		06/24/16 09:53	07/11/16 16:55	1
Benzo[g,h,i]perylene	ND		0.19	0.038	ug/L		06/24/16 09:53	07/11/16 16:55	1
Benzo[k]fluoranthene	ND		0.19	0.069	ug/L		06/24/16 09:53	07/11/16 16:55	1
Chrysene	ND		0.19	0.037	ug/L		06/24/16 09:53	07/11/16 16:55	1
Dibenz(a,h)anthracene	ND		0.19	0.044	ug/L		06/24/16 09:53	07/11/16 16:55	1
Fluoranthene	ND		0.19	0.032	ug/L		06/24/16 09:53	07/11/16 16:55	1
Fluorene	ND		0.19	0.030	ug/L		06/24/16 09:53	07/11/16 16:55	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

**Client Sample ID: EB-1 20160621-01**

**Lab Sample ID: 160-17910-4**

Date Collected: 06/21/16 13:45

Matrix: Water

Date Received: 06/22/16 16:12

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Indeno[1,2,3-cd]pyrene	ND		0.19	0.038	ug/L		06/24/16 09:53	07/11/16 16:55	1
Naphthalene	ND		0.19	0.065	ug/L		06/24/16 09:53	07/11/16 16:55	1
<b>Phenanthrene</b>	<b>0.067</b>	<b>J</b>	0.19	0.062	ug/L		06/24/16 09:53	07/11/16 16:55	1
Pyrene	ND		0.19	0.035	ug/L		06/24/16 09:53	07/11/16 16:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	57		10 - 104				06/24/16 09:53	07/11/16 16:55	1
Nitrobenzene-d5 (Surr)	47		21 - 110				06/24/16 09:53	07/11/16 16:55	1
Terphenyl-d14 (Surr)	71		22 - 103				06/24/16 09:53	07/11/16 16:55	1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.6	0.23	pg/L		06/28/16 08:38	07/25/16 14:56	1
2,3,7,8-TCDF	ND		9.6	0.13	pg/L		06/28/16 08:38	07/25/16 14:56	1
1,2,3,7,8-PeCDD	ND		48	0.33	pg/L		06/28/16 08:38	07/25/16 14:56	1
1,2,3,7,8-PeCDF	ND		48	0.22	pg/L		06/28/16 08:38	07/25/16 14:56	1
2,3,4,7,8-PeCDF	ND		48	0.23	pg/L		06/28/16 08:38	07/25/16 14:56	1
1,2,3,4,7,8-HxCDD	ND		48	0.18	pg/L		06/28/16 08:38	07/25/16 14:56	1
1,2,3,6,7,8-HxCDD	ND		48	0.17	pg/L		06/28/16 08:38	07/25/16 14:56	1
<b>1,2,3,7,8,9-HxCDD</b>	<b>0.45</b>	<b>J q B</b>	48	0.14	pg/L		06/28/16 08:38	07/25/16 14:56	1
<b>1,2,3,4,7,8-HxCDF</b>	<b>0.37</b>	<b>J q</b>	48	0.18	pg/L		06/28/16 08:38	07/25/16 14:56	1
<b>1,2,3,6,7,8-HxCDF</b>	<b>0.43</b>	<b>J q</b>	48	0.16	pg/L		06/28/16 08:38	07/25/16 14:56	1
1,2,3,7,8,9-HxCDF	ND		48	0.17	pg/L		06/28/16 08:38	07/25/16 14:56	1
2,3,4,6,7,8-HxCDF	ND		48	0.17	pg/L		06/28/16 08:38	07/25/16 14:56	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.88</b>	<b>J B</b>	48	0.18	pg/L		06/28/16 08:38	07/25/16 14:56	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.54</b>	<b>J B</b>	48	0.14	pg/L		06/28/16 08:38	07/25/16 14:56	1
<b>1,2,3,4,7,8,9-HpCDF</b>	<b>0.39</b>	<b>J q B</b>	48	0.17	pg/L		06/28/16 08:38	07/25/16 14:56	1
<b>OCDD</b>	<b>3.7</b>	<b>J B</b>	96	0.36	pg/L		06/28/16 08:38	07/25/16 14:56	1
<b>OCDF</b>	<b>1.7</b>	<b>J B</b>	96	0.32	pg/L		06/28/16 08:38	07/25/16 14:56	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	74		40 - 135				06/28/16 08:38	07/25/16 14:56	1
13C-2,3,7,8-TCDF	83		40 - 135				06/28/16 08:38	07/25/16 14:56	1
13C-1,2,3,7,8-PeCDD	70		40 - 135				06/28/16 08:38	07/25/16 14:56	1
13C-1,2,3,7,8-PeCDF	78		40 - 135				06/28/16 08:38	07/25/16 14:56	1
13C-1,2,3,6,7,8-HxCDD	77		40 - 135				06/28/16 08:38	07/25/16 14:56	1
13C-1,2,3,4,7,8-HxCDF	77		40 - 135				06/28/16 08:38	07/25/16 14:56	1
13C-1,2,3,4,6,7,8-HpCDD	65		40 - 135				06/28/16 08:38	07/25/16 14:56	1
13C-1,2,3,4,6,7,8-HpCDF	74		40 - 135				06/28/16 08:38	07/25/16 14:56	1
13C-OCDD	53		40 - 135				06/28/16 08:38	07/25/16 14:56	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	1.2	ug/L		07/07/16 12:43	07/14/16 21:47	2
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 21:47	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 21:47	2
Lithium	ND		5.0	1.1	ug/L		07/07/16 12:43	07/14/16 21:47	2

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

**Client Sample ID: EB-1 20160621-01**

**Lab Sample ID: 160-17910-4**

Date Collected: 06/21/16 13:45

Matrix: Water

Date Received: 06/22/16 16:12

**Method: 900.0 - Gross Alpha and Gross Beta Radioactivity**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	-0.100	U	0.694	0.694	3.00	1.33	pCi/L	07/13/16 09:22	07/18/16 13:25	1
Gross Beta	0.180	U	0.506	0.506	4.00	0.879	pCi/L	07/13/16 09:22	07/18/16 13:25	1

**Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-4.95	U	11.1	11.1		14.9	pCi/L	06/27/16 15:24	07/01/16 15:11	1
Cesium-137	0.339	U	9.36	9.36	20.0	16.2	pCi/L	06/27/16 15:24	07/01/16 15:11	1
Cobalt-60	-11.3	U	5.90	6.00		17.3	pCi/L	06/27/16 15:24	07/01/16 15:11	1

Other Detected Radionuclides		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide	Result	Uncert.	Uncert.						
		(2σ+/-)	(2σ+/-)						
Other Detected Radionuclide	None					pCi/L	06/27/16 15:24	07/01/16 15:11	1

**Client Sample ID: MW-3 20160620-01**

**Lab Sample ID: 160-17910-6**

Date Collected: 06/20/16 17:40

Matrix: Water

Date Received: 06/22/16 16:12

**Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.19	0.047	ug/L		06/24/16 09:53	07/11/16 17:29	1
2-Methylnaphthalene	ND		0.19	0.028	ug/L		06/24/16 09:53	07/11/16 17:29	1
Acenaphthene	ND		0.19	0.033	ug/L		06/24/16 09:53	07/11/16 17:29	1
Acenaphthylene	ND		0.19	0.036	ug/L		06/24/16 09:53	07/11/16 17:29	1
Anthracene	ND		0.19	0.037	ug/L		06/24/16 09:53	07/11/16 17:29	1
Benzo[a]anthracene	ND		0.19	0.029	ug/L		06/24/16 09:53	07/11/16 17:29	1
Benzo[a]pyrene	ND		0.19	0.050	ug/L		06/24/16 09:53	07/11/16 17:29	1
Benzo[b]fluoranthene	ND		0.19	0.052	ug/L		06/24/16 09:53	07/11/16 17:29	1
Benzo[g,h,i]perylene	ND		0.19	0.038	ug/L		06/24/16 09:53	07/11/16 17:29	1
Benzo[k]fluoranthene	ND		0.19	0.069	ug/L		06/24/16 09:53	07/11/16 17:29	1
Chrysene	ND		0.19	0.037	ug/L		06/24/16 09:53	07/11/16 17:29	1
Dibenz(a,h)anthracene	ND		0.19	0.043	ug/L		06/24/16 09:53	07/11/16 17:29	1
Fluoranthene	ND		0.19	0.032	ug/L		06/24/16 09:53	07/11/16 17:29	1
Fluorene	ND		0.19	0.030	ug/L		06/24/16 09:53	07/11/16 17:29	1
Indeno[1,2,3-cd]pyrene	ND		0.19	0.038	ug/L		06/24/16 09:53	07/11/16 17:29	1
Naphthalene	ND		0.19	0.064	ug/L		06/24/16 09:53	07/11/16 17:29	1
<b>Phenanthrene</b>	<b>0.078</b>	<b>J</b>	0.19	0.061	ug/L		06/24/16 09:53	07/11/16 17:29	1
Pyrene	ND		0.19	0.035	ug/L		06/24/16 09:53	07/11/16 17:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	62		10 - 104	06/24/16 09:53	07/11/16 17:29	1
Nitrobenzene-d5 (Surr)	49		21 - 110	06/24/16 09:53	07/11/16 17:29	1
Terphenyl-d14 (Surr)	61		22 - 103	06/24/16 09:53	07/11/16 17:29	1

TestAmerica St. Louis

# Client Sample Results

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

**Client Sample ID: MW-3 20160620-01**

**Lab Sample ID: 160-17910-6**

Date Collected: 06/20/16 17:40

Matrix: Water

Date Received: 06/22/16 16:12

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.6	0.25	pg/L		06/28/16 08:38	07/25/16 15:44	1
2,3,7,8-TCDF	ND		9.6	0.14	pg/L		06/28/16 08:38	07/25/16 15:44	1
1,2,3,7,8-PeCDD	ND		48	0.27	pg/L		06/28/16 08:38	07/25/16 15:44	1
1,2,3,7,8-PeCDF	ND		48	0.21	pg/L		06/28/16 08:38	07/25/16 15:44	1
2,3,4,7,8-PeCDF	ND		48	0.22	pg/L		06/28/16 08:38	07/25/16 15:44	1
1,2,3,4,7,8-HxCDD	ND		48	0.15	pg/L		06/28/16 08:38	07/25/16 15:44	1
1,2,3,6,7,8-HxCDD	ND		48	0.14	pg/L		06/28/16 08:38	07/25/16 15:44	1
1,2,3,7,8,9-HxCDD	ND		48	0.12	pg/L		06/28/16 08:38	07/25/16 15:44	1
1,2,3,4,7,8-HxCDF	ND		48	0.20	pg/L		06/28/16 08:38	07/25/16 15:44	1
1,2,3,6,7,8-HxCDF	ND		48	0.18	pg/L		06/28/16 08:38	07/25/16 15:44	1
1,2,3,7,8,9-HxCDF	ND		48	0.19	pg/L		06/28/16 08:38	07/25/16 15:44	1
2,3,4,6,7,8-HxCDF	ND		48	0.20	pg/L		06/28/16 08:38	07/25/16 15:44	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>0.75</b>	<b>J B</b>	48	0.15	pg/L		06/28/16 08:38	07/25/16 15:44	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>0.30</b>	<b>J B</b>	48	0.10	pg/L		06/28/16 08:38	07/25/16 15:44	1
1,2,3,4,7,8,9-HpCDF	ND		48	0.12	pg/L		06/28/16 08:38	07/25/16 15:44	1
<b>OCDD</b>	<b>2.2</b>	<b>J q B</b>	96	0.31	pg/L		06/28/16 08:38	07/25/16 15:44	1
<b>OCDF</b>	<b>1.0</b>	<b>J q B</b>	96	0.27	pg/L		06/28/16 08:38	07/25/16 15:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	78		40 - 135				06/28/16 08:38	07/25/16 15:44	1
13C-2,3,7,8-TCDF	86		40 - 135				06/28/16 08:38	07/25/16 15:44	1
13C-1,2,3,7,8-PeCDD	73		40 - 135				06/28/16 08:38	07/25/16 15:44	1
13C-1,2,3,7,8-PeCDF	81		40 - 135				06/28/16 08:38	07/25/16 15:44	1
13C-1,2,3,6,7,8-HxCDD	85		40 - 135				06/28/16 08:38	07/25/16 15:44	1
13C-1,2,3,4,7,8-HxCDF	83		40 - 135				06/28/16 08:38	07/25/16 15:44	1
13C-1,2,3,4,6,7,8-HpCDD	72		40 - 135				06/28/16 08:38	07/25/16 15:44	1
13C-1,2,3,4,6,7,8-HpCDF	79		40 - 135				06/28/16 08:38	07/25/16 15:44	1
13C-OCDD	58		40 - 135				06/28/16 08:38	07/25/16 15:44	1

## Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>7.6</b>	<b>J</b>	10	1.2	ug/L		07/07/16 13:18	07/14/16 21:54	2
<b>Chromium</b>	<b>1.1</b>	<b>J</b>	10	1.0	ug/L		07/07/16 13:18	07/14/16 21:54	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 13:18	07/14/16 21:54	2
<b>Lithium</b>	<b>4.2</b>	<b>J</b>	5.0	1.1	ug/L		07/07/16 13:18	07/14/16 21:54	2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>2.5</b>	<b>J</b>	10	1.2	ug/L		07/07/16 12:43	07/14/16 20:26	2
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 20:26	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 20:26	2
<b>Lithium</b>	<b>4.2</b>	<b>J</b>	5.0	1.1	ug/L		07/07/16 12:43	07/14/16 20:26	2

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	-2.51	U G	5.46	5.47	3.00	11.3	pCi/L	07/14/16 14:38	07/18/16 13:25	1
Gross Beta	4.43	U G	2.93	2.96	4.00	4.55	pCi/L	07/14/16 14:38	07/18/16 13:25	1

TestAmerica St. Louis



# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

**Client Sample ID: MW-3 20160620-01**

**Lab Sample ID: 160-17910-6**

Date Collected: 06/20/16 17:40

Matrix: Water

Date Received: 06/22/16 16:12

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Americium-241	9.87	U	9.28	9.35		12.4	pCi/L	06/27/16 15:24	07/01/16 17:23	1
Cesium-137	-2.76	U	7.02	7.02	20.0	12.0	pCi/L	06/27/16 15:24	07/01/16 17:23	1
Cobalt-60	4.45	U	2.49	2.52		6.43	pCi/L	06/27/16 15:24	07/01/16 17:23	1
<b>Other Detected</b>										
Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Ac-228	35.5		16.1	16.4		13.5	pCi/L	06/27/16 15:24	07/01/16 17:23	1
Bi-214	34.7		14.7	15.1		15.9	pCi/L	06/27/16 15:24	07/01/16 17:23	1
Pb-214	38.4		13.5	14.1		17.1	pCi/L	06/27/16 15:24	07/01/16 17:23	1

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

**Lab Sample ID: MB 160-257883/1-A**  
**Matrix: Water**  
**Analysis Batch: 259970**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 257883**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.20	0.050	ug/L		06/24/16 09:53	07/11/16 12:58	1
2-Methylnaphthalene	ND		0.20	0.030	ug/L		06/24/16 09:53	07/11/16 12:58	1
Acenaphthene	ND		0.20	0.035	ug/L		06/24/16 09:53	07/11/16 12:58	1
Acenaphthylene	ND		0.20	0.038	ug/L		06/24/16 09:53	07/11/16 12:58	1
Anthracene	ND		0.20	0.039	ug/L		06/24/16 09:53	07/11/16 12:58	1
Benzo[a]anthracene	ND		0.20	0.031	ug/L		06/24/16 09:53	07/11/16 12:58	1
Benzo[a]pyrene	ND		0.20	0.053	ug/L		06/24/16 09:53	07/11/16 12:58	1
Benzo[b]fluoranthene	ND		0.20	0.055	ug/L		06/24/16 09:53	07/11/16 12:58	1
Benzo[g,h,i]perylene	ND		0.20	0.040	ug/L		06/24/16 09:53	07/11/16 12:58	1
Benzo[k]fluoranthene	ND		0.20	0.073	ug/L		06/24/16 09:53	07/11/16 12:58	1
Chrysene	ND		0.20	0.039	ug/L		06/24/16 09:53	07/11/16 12:58	1
Dibenz(a,h)anthracene	ND		0.20	0.046	ug/L		06/24/16 09:53	07/11/16 12:58	1
Fluoranthene	ND		0.20	0.034	ug/L		06/24/16 09:53	07/11/16 12:58	1
Fluorene	ND		0.20	0.032	ug/L		06/24/16 09:53	07/11/16 12:58	1
Indeno[1,2,3-cd]pyrene	ND		0.20	0.040	ug/L		06/24/16 09:53	07/11/16 12:58	1
Naphthalene	ND		0.20	0.068	ug/L		06/24/16 09:53	07/11/16 12:58	1
Phenanthrene	ND		0.20	0.065	ug/L		06/24/16 09:53	07/11/16 12:58	1
Pyrene	ND		0.20	0.037	ug/L		06/24/16 09:53	07/11/16 12:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	65		10 - 104	06/24/16 09:53	07/11/16 12:58	1
Nitrobenzene-d5 (Surr)	75		21 - 110	06/24/16 09:53	07/11/16 12:58	1
Terphenyl-d14 (Surr)	72		22 - 103	06/24/16 09:53	07/11/16 12:58	1

**Lab Sample ID: LCS 160-257883/2-A**  
**Matrix: Water**  
**Analysis Batch: 259970**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257883**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	1.00	0.819		ug/L		82	70 - 130
2-Methylnaphthalene	1.00	0.818		ug/L		82	70 - 130
Acenaphthene	1.00	0.831		ug/L		83	36 - 98
Acenaphthylene	1.00	0.750		ug/L		75	37 - 97
Anthracene	1.00	0.762		ug/L		76	38 - 109
Benzo[a]anthracene	1.00	0.793		ug/L		79	51 - 111
Benzo[a]pyrene	1.00	0.674		ug/L		67	40 - 110
Benzo[b]fluoranthene	1.00	0.652		ug/L		65	40 - 122
Benzo[g,h,i]perylene	1.00	0.633		ug/L		63	37 - 111
Benzo[k]fluoranthene	1.00	1.07		ug/L		107	41 - 119
Chrysene	1.00	0.934		ug/L		93	52 - 107
Dibenz(a,h)anthracene	1.00	0.498		ug/L		50	36 - 118
Fluoranthene	1.00	0.882		ug/L		88	20 - 150
Fluorene	1.00	0.842		ug/L		84	21 - 126
Indeno[1,2,3-cd]pyrene	1.00	0.465		ug/L		46	31 - 130
Naphthalene	1.00	0.824		ug/L		82	34 - 97
Phenanthrene	1.00	0.896		ug/L		90	48 - 108
Pyrene	1.00	0.884		ug/L		88	43 - 124

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# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: LCS 160-257883/2-A**  
**Matrix: Water**  
**Analysis Batch: 259970**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 257883**

Surrogate	LCS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	69		10 - 104
Nitrobenzene-d5 (Surr)	75		21 - 110
Terphenyl-d14 (Surr)	94		22 - 103

**Lab Sample ID: 160-17910-2 MS**  
**Matrix: Water**  
**Analysis Batch: 259970**

**Client Sample ID: MW-8 20160621-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257883**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	Limits
				Result	Qualifier				
1-Methylnaphthalene	ND		0.946	0.623		ug/L		66	50 - 150
2-Methylnaphthalene	ND		0.946	0.636		ug/L		67	50 - 150
Acenaphthene	ND		0.946	0.660		ug/L		70	50 - 150
Acenaphthylene	ND		0.946	0.580		ug/L		61	50 - 150
Anthracene	ND		0.946	0.569		ug/L		60	50 - 150
Benzo[a]anthracene	ND		0.946	0.523		ug/L		55	50 - 150
Benzo[a]pyrene	ND	F1	0.946	0.378	F1	ug/L		40	50 - 150
Benzo[b]fluoranthene	ND	F1	0.946	0.357	F1	ug/L		38	50 - 150
Benzo[g,h,i]perylene	ND	F1	0.946	0.124	J F1	ug/L		13	50 - 150
Benzo[k]fluoranthene	ND		0.946	0.607		ug/L		64	50 - 150
Chrysene	ND		0.946	0.666		ug/L		70	50 - 150
Dibenz(a,h)anthracene	ND	F1 F2	0.946	0.0661	J F1	ug/L		7	50 - 150
Fluoranthene	ND		0.946	0.724		ug/L		77	50 - 150
Fluorene	ND		0.946	0.663		ug/L		70	50 - 150
Indeno[1,2,3-cd]pyrene	ND	F1	0.946	0.113	J F1	ug/L		12	50 - 150
Naphthalene	ND		0.946	0.662		ug/L		70	50 - 150
Phenanthrene	0.084	J	0.946	0.755		ug/L		71	50 - 150
Pyrene	ND		0.946	0.704		ug/L		74	50 - 150

Surrogate	MS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl (Surr)	63		10 - 104
Nitrobenzene-d5 (Surr)	56		21 - 110
Terphenyl-d14 (Surr)	58		22 - 103

**Lab Sample ID: 160-17910-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 259970**

**Client Sample ID: MW-8 20160621-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257883**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	Limits	RPD	
				Result	Qualifier					RPD	Limit
1-Methylnaphthalene	ND		0.966	0.589		ug/L		61	50 - 150	6	20
2-Methylnaphthalene	ND		0.966	0.598		ug/L		62	50 - 150	6	20
Acenaphthene	ND		0.966	0.622		ug/L		64	50 - 150	6	20
Acenaphthylene	ND		0.966	0.535		ug/L		55	50 - 150	8	20
Anthracene	ND		0.966	0.556		ug/L		58	50 - 150	2	20
Benzo[a]anthracene	ND		0.966	0.510		ug/L		53	50 - 150	3	20
Benzo[a]pyrene	ND	F1	0.966	0.359	F1	ug/L		37	50 - 150	5	20
Benzo[b]fluoranthene	ND	F1	0.966	0.359	F1	ug/L		37	50 - 150	0	20
Benzo[g,h,i]perylene	ND	F1	0.966	0.148	J F1	ug/L		15	50 - 150	18	20
Benzo[k]fluoranthene	ND		0.966	0.613		ug/L		63	50 - 150	1	20

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# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: 160-17910-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 259970**

**Client Sample ID: MW-8 20160621-01**  
**Prep Type: Total/NA**  
**Prep Batch: 257883**

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Chrysene	ND		0.966	0.666		ug/L		69	50 - 150	0	20
Dibenz(a,h)anthracene	ND	F1 F2	0.966	0.0859	J F1 F2	ug/L		9	50 - 150	26	20
Fluoranthene	ND		0.966	0.652		ug/L		67	50 - 150	11	20
Fluorene	ND		0.966	0.614		ug/L		64	50 - 150	8	20
Indeno[1,2,3-cd]pyrene	ND	F1	0.966	0.112	J F1	ug/L		12	50 - 150	0	20
Naphthalene	ND		0.966	0.623		ug/L		65	50 - 150	6	20
Phenanthrene	0.084	J	0.966	0.753		ug/L		69	50 - 150	0	20
Pyrene	ND		0.966	0.647		ug/L		67	50 - 150	8	20
<b>Surrogate</b>	<b>MSD</b>	<b>MSD</b>									
	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>								
2-Fluorobiphenyl (Surr)	58		10 - 104								
Nitrobenzene-d5 (Surr)	47		21 - 110								
Terphenyl-d14 (Surr)	58		22 - 103								

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

**Lab Sample ID: MB 180-182465/1-A**  
**Matrix: Water**  
**Analysis Batch: 182610**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 182465**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
PCB-1016	ND		0.010	0.0037	ug/L		07/21/16 03:47	07/21/16 20:36	1
PCB-1221	ND		0.010	0.0059	ug/L		07/21/16 03:47	07/21/16 20:36	1
PCB-1232	ND		0.010	0.0060	ug/L		07/21/16 03:47	07/21/16 20:36	1
PCB-1242	ND		0.010	0.0034	ug/L		07/21/16 03:47	07/21/16 20:36	1
PCB-1248	ND		0.010	0.0032	ug/L		07/21/16 03:47	07/21/16 20:36	1
PCB-1254	ND		0.010	0.0044	ug/L		07/21/16 03:47	07/21/16 20:36	1
PCB-1260	ND		0.010	0.0029	ug/L		07/21/16 03:47	07/21/16 20:36	1
<b>Surrogate</b>	<b>MB</b>	<b>MB</b>							
	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
DCB Decachlorobiphenyl (Surr)	84		16 - 150				07/21/16 03:47	07/21/16 20:36	1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

**Lab Sample ID: MB 320-115602/1-A**  
**Matrix: Water**  
**Analysis Batch: 119384**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 115602**

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,3,7,8-TCDD	ND		10	0.21	pg/L		06/27/16 15:03	07/25/16 23:13	1
2,3,7,8-TCDF	ND		10	0.11	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,7,8-PeCDD	ND		50	0.24	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,7,8-PeCDF	ND		50	0.17	pg/L		06/27/16 15:03	07/25/16 23:13	1
2,3,4,7,8-PeCDF	ND		50	0.17	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,4,7,8-HxCDD	ND		50	0.16	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,6,7,8-HxCDD	ND		50	0.14	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,7,8,9-HxCDD	0.194	J q	50	0.12	pg/L		06/27/16 15:03	07/25/16 23:13	1

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# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: MB 320-115602/1-A**  
**Matrix: Water**  
**Analysis Batch: 119384**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 115602**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	ND		50	0.20	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,6,7,8-HxCDF	ND		50	0.18	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,7,8,9-HxCDF	ND		50	0.19	pg/L		06/27/16 15:03	07/25/16 23:13	1
2,3,4,6,7,8-HxCDF	ND		50	0.19	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,4,6,7,8-HpCDD	0.682	J	50	0.15	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,4,6,7,8-HpCDF	0.359	J	50	0.13	pg/L		06/27/16 15:03	07/25/16 23:13	1
1,2,3,4,7,8,9-HpCDF	ND		50	0.15	pg/L		06/27/16 15:03	07/25/16 23:13	1
OCDD	2.17	J	100	0.29	pg/L		06/27/16 15:03	07/25/16 23:13	1
OCDF	0.702	J	100	0.22	pg/L		06/27/16 15:03	07/25/16 23:13	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	79		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-2,3,7,8-TCDF	87		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,7,8-PeCDD	85		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,7,8-PeCDF	89		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,6,7,8-HxCDD	81		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,4,7,8-HxCDF	79		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,4,6,7,8-HpCDD	72		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-1,2,3,4,6,7,8-HpCDF	78		40 - 135	06/27/16 15:03	07/25/16 23:13	1
13C-OCDD	60		40 - 135	06/27/16 15:03	07/25/16 23:13	1

**Lab Sample ID: LCS 320-115602/2-A**  
**Matrix: Water**  
**Analysis Batch: 119384**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 115602**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	200	232		pg/L		116	64 - 142
2,3,7,8-TCDF	200	204		pg/L		102	71 - 142
1,2,3,7,8-PeCDD	1000	1180		pg/L		118	71 - 140
1,2,3,7,8-PeCDF	1000	1100		pg/L		110	76 - 135
2,3,4,7,8-PeCDF	1000	1140		pg/L		114	74 - 137
1,2,3,4,7,8-HxCDD	1000	1050		pg/L		105	56 - 146
1,2,3,6,7,8-HxCDD	1000	1060		pg/L		106	73 - 144
1,2,3,7,8,9-HxCDD	1000	999		pg/L		100	71 - 151
1,2,3,4,7,8-HxCDF	1000	1090		pg/L		109	75 - 131
1,2,3,6,7,8-HxCDF	1000	1100		pg/L		110	76 - 133
1,2,3,7,8,9-HxCDF	1000	1010		pg/L		101	77 - 142
2,3,4,6,7,8-HxCDF	1000	1110		pg/L		111	80 - 137
1,2,3,4,6,7,8-HpCDD	1000	1140		pg/L		114	78 - 139
1,2,3,4,6,7,8-HpCDF	1000	1120		pg/L		112	79 - 133
1,2,3,4,7,8,9-HpCDF	1000	1080		pg/L		108	83 - 130
OCDD	2000	2200		pg/L		110	80 - 132
OCDF	2000	2300		pg/L		115	72 - 140

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	78		40 - 135
13C-2,3,7,8-TCDF	85		40 - 135
13C-1,2,3,7,8-PeCDD	75		40 - 135

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: LCS 320-115602/2-A**  
**Matrix: Water**  
**Analysis Batch: 119384**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 115602**

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-1,2,3,7,8-PeCDF	82		40 - 135
13C-1,2,3,6,7,8-HxCDD	84		40 - 135
13C-1,2,3,4,7,8-HxCDF	79		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	72		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	78		40 - 135
13C-OCDD	61		40 - 135

**Lab Sample ID: 160-17910-2 MS**  
**Matrix: Water**  
**Analysis Batch: 119384**

**Client Sample ID: MW-8 20160621-01**  
**Prep Type: Total/NA**  
**Prep Batch: 115602**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MS MS</i>		<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
				<i>Result</i>	<i>Qualifier</i>				
2,3,7,8-TCDD	ND		191	222		pg/L		116	64 - 142
2,3,7,8-TCDF	ND		191	196		pg/L		103	71 - 142
1,2,3,7,8-PeCDD	ND		954	1130		pg/L		118	71 - 140
1,2,3,7,8-PeCDF	ND		954	1060		pg/L		111	76 - 135
2,3,4,7,8-PeCDF	ND		954	1070		pg/L		112	74 - 137
1,2,3,4,7,8-HxCDD	ND		954	1060		pg/L		111	56 - 146
1,2,3,6,7,8-HxCDD	ND		954	1020		pg/L		106	73 - 144
1,2,3,7,8,9-HxCDD	ND		954	978		pg/L		103	71 - 151
1,2,3,4,7,8-HxCDF	0.24	J	954	1080		pg/L		114	75 - 131
1,2,3,6,7,8-HxCDF	ND		954	1070		pg/L		113	76 - 133
1,2,3,7,8,9-HxCDF	ND		954	1000		pg/L		105	77 - 142
2,3,4,6,7,8-HxCDF	ND		954	1080		pg/L		113	80 - 137
1,2,3,4,6,7,8-HpCDD	0.61	J B	954	1120		pg/L		117	78 - 139
1,2,3,4,6,7,8-HpCDF	ND		954	1080		pg/L		113	79 - 133
1,2,3,4,7,8,9-HpCDF	ND		954	1050		pg/L		111	83 - 130
OCDD	2.6	J B	1910	2150		pg/L		113	80 - 132
OCDF	0.85	J B q	1910	2270		pg/L		119	72 - 140

<i>Isotope Dilution</i>	<i>MS MS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-2,3,7,8-TCDD	74		40 - 135
13C-2,3,7,8-TCDF	81		40 - 135
13C-1,2,3,7,8-PeCDD	74		40 - 135
13C-1,2,3,7,8-PeCDF	81		40 - 135
13C-1,2,3,6,7,8-HxCDD	79		40 - 135
13C-1,2,3,4,7,8-HxCDF	75		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	70		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	77		40 - 135
13C-OCDD	62		40 - 135

**Lab Sample ID: 160-17910-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 119384**

**Client Sample ID: MW-8 20160621-01**  
**Prep Type: Total/NA**  
**Prep Batch: 115602**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD MSD</i>		<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>Limit</i>
				<i>Result</i>	<i>Qualifier</i>						
2,3,7,8-TCDD	ND		191	225		pg/L		118	64 - 142	2	20
2,3,7,8-TCDF	ND		191	195		pg/L		102	71 - 142	1	20
1,2,3,7,8-PeCDD	ND		957	1150		pg/L		120	71 - 140	2	20

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: 160-17910-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 119384**

**Client Sample ID: MW-8 20160621-01**  
**Prep Type: Total/NA**  
**Prep Batch: 115602**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
1,2,3,7,8-PeCDF	ND		957	1080		pg/L		113	76 - 135	2	20
2,3,4,7,8-PeCDF	ND		957	1090		pg/L		113	74 - 137	1	20
1,2,3,4,7,8-HxCDD	ND		957	1080		pg/L		113	56 - 146	2	20
1,2,3,6,7,8-HxCDD	ND		957	1070		pg/L		112	73 - 144	5	20
1,2,3,7,8,9-HxCDD	ND		957	1000		pg/L		105	71 - 151	2	20
1,2,3,4,7,8-HxCDF	0.24	J	957	1070		pg/L		111	75 - 131	2	20
1,2,3,6,7,8-HxCDF	ND		957	1060		pg/L		111	76 - 133	1	20
1,2,3,7,8,9-HxCDF	ND		957	971		pg/L		101	77 - 142	3	20
2,3,4,6,7,8-HxCDF	ND		957	1070		pg/L		112	80 - 137	0	20
1,2,3,4,6,7,8-HpCDD	0.61	J B	957	1130		pg/L		118	78 - 139	1	20
1,2,3,4,6,7,8-HpCDF	ND		957	1110		pg/L		116	79 - 133	3	20
1,2,3,4,7,8,9-HpCDF	ND		957	1080		pg/L		113	83 - 130	3	20
OCDD	2.6	J B	1910	2170		pg/L		113	80 - 132	1	20
OCDF	0.85	J B q	1910	2330		pg/L		122	72 - 140	3	20

Isotope Dilution	MSD	MSD	Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	76		40 - 135
13C-2,3,7,8-TCDF	82		40 - 135
13C-1,2,3,7,8-PeCDD	74		40 - 135
13C-1,2,3,7,8-PeCDF	82		40 - 135
13C-1,2,3,6,7,8-HxCDD	83		40 - 135
13C-1,2,3,4,7,8-HxCDF	83		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	76		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	81		40 - 135
13C-OCDD	66		40 - 135

**Lab Sample ID: MB 320-115675/1-A**  
**Matrix: Water**  
**Analysis Batch: 119381**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 115675**

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,3,7,8-TCDD	ND		10	0.27	pg/L		06/28/16 08:38	07/25/16 12:38	1
2,3,7,8-TCDF	ND		10	0.14	pg/L		06/28/16 08:38	07/25/16 12:38	1
1,2,3,7,8-PeCDD	ND		50	0.26	pg/L		06/28/16 08:38	07/25/16 12:38	1
1,2,3,7,8-PeCDF	ND		50	0.22	pg/L		06/28/16 08:38	07/25/16 12:38	1
2,3,4,7,8-PeCDF	ND		50	0.23	pg/L		06/28/16 08:38	07/25/16 12:38	1
1,2,3,4,7,8-HxCDD	0.232	J	50	0.18	pg/L		06/28/16 08:38	07/25/16 12:38	1
1,2,3,6,7,8-HxCDD	ND		50	0.16	pg/L		06/28/16 08:38	07/25/16 12:38	1
1,2,3,7,8,9-HxCDD	0.365	J	50	0.14	pg/L		06/28/16 08:38	07/25/16 12:38	1
1,2,3,4,7,8-HxCDF	ND		50	0.19	pg/L		06/28/16 08:38	07/25/16 12:38	1
1,2,3,6,7,8-HxCDF	ND		50	0.17	pg/L		06/28/16 08:38	07/25/16 12:38	1
1,2,3,7,8,9-HxCDF	ND		50	0.19	pg/L		06/28/16 08:38	07/25/16 12:38	1
2,3,4,6,7,8-HxCDF	ND		50	0.19	pg/L		06/28/16 08:38	07/25/16 12:38	1
1,2,3,4,6,7,8-HpCDD	0.970	J	50	0.17	pg/L		06/28/16 08:38	07/25/16 12:38	1
1,2,3,4,6,7,8-HpCDF	1.10	J q	50	0.16	pg/L		06/28/16 08:38	07/25/16 12:38	1
1,2,3,4,7,8,9-HpCDF	0.318	J q	50	0.19	pg/L		06/28/16 08:38	07/25/16 12:38	1
OCDD	3.77	J	100	0.32	pg/L		06/28/16 08:38	07/25/16 12:38	1
OCDF	1.69	J	100	0.24	pg/L		06/28/16 08:38	07/25/16 12:38	1

TestAmerica St. Louis



# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,7,8-TCDD	77		40 - 135	06/28/16 08:38	07/25/16 12:38	1
13C-2,3,7,8-TCDF	83		40 - 135	06/28/16 08:38	07/25/16 12:38	1
13C-1,2,3,7,8-PeCDD	78		40 - 135	06/28/16 08:38	07/25/16 12:38	1
13C-1,2,3,7,8-PeCDF	82		40 - 135	06/28/16 08:38	07/25/16 12:38	1
13C-1,2,3,6,7,8-HxCDD	83		40 - 135	06/28/16 08:38	07/25/16 12:38	1
13C-1,2,3,4,7,8-HxCDF	80		40 - 135	06/28/16 08:38	07/25/16 12:38	1
13C-1,2,3,4,6,7,8-HpCDD	75		40 - 135	06/28/16 08:38	07/25/16 12:38	1
13C-1,2,3,4,6,7,8-HpCDF	81		40 - 135	06/28/16 08:38	07/25/16 12:38	1
13C-OCDD	64		40 - 135	06/28/16 08:38	07/25/16 12:38	1

**Lab Sample ID: LCS 320-115675/2-A**  
**Matrix: Water**  
**Analysis Batch: 119381**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 115675**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
							Limits	RPD
2,3,7,8-TCDD	200	223		pg/L		111	64 - 142	
2,3,7,8-TCDF	200	202		pg/L		101	71 - 142	
1,2,3,7,8-PeCDD	1000	1170		pg/L		117	71 - 140	
1,2,3,7,8-PeCDF	1000	1110		pg/L		111	76 - 135	
2,3,4,7,8-PeCDF	1000	1130		pg/L		113	74 - 137	
1,2,3,4,7,8-HxCDD	1000	1120		pg/L		112	56 - 146	
1,2,3,6,7,8-HxCDD	1000	1140		pg/L		114	73 - 144	
1,2,3,7,8,9-HxCDD	1000	1060		pg/L		106	71 - 151	
1,2,3,4,7,8-HxCDF	1000	1120		pg/L		112	75 - 131	
1,2,3,6,7,8-HxCDF	1000	1110		pg/L		111	76 - 133	
1,2,3,7,8,9-HxCDF	1000	1080		pg/L		108	77 - 142	
2,3,4,6,7,8-HxCDF	1000	1150		pg/L		115	80 - 137	
1,2,3,4,6,7,8-HpCDD	1000	1160		pg/L		116	78 - 139	
1,2,3,4,6,7,8-HpCDF	1000	1130		pg/L		113	79 - 133	
1,2,3,4,7,8,9-HpCDF	1000	1100		pg/L		110	83 - 130	
OCDD	2000	2280		pg/L		114	80 - 132	
OCDF	2000	2370		pg/L		118	72 - 140	

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	78		40 - 135
13C-2,3,7,8-TCDF	83		40 - 135
13C-1,2,3,7,8-PeCDD	75		40 - 135
13C-1,2,3,7,8-PeCDF	80		40 - 135
13C-1,2,3,6,7,8-HxCDD	83		40 - 135
13C-1,2,3,4,7,8-HxCDF	79		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	74		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	80		40 - 135
13C-OCDD	63		40 - 135

**Lab Sample ID: LCSD 320-115675/3-A**  
**Matrix: Water**  
**Analysis Batch: 119381**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 115675**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	
							Limits	RPD	RPD	Limit
2,3,7,8-TCDD	200	230		pg/L		115	64 - 142	3	20	
2,3,7,8-TCDF	200	207		pg/L		104	71 - 142	2	20	
1,2,3,7,8-PeCDD	1000	1200		pg/L		120	71 - 140	2	20	
1,2,3,7,8-PeCDF	1000	1110		pg/L		111	76 - 135	0	20	
2,3,4,7,8-PeCDF	1000	1140		pg/L		114	74 - 137	1	20	

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# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: LCSD 320-115675/3-A**

**Matrix: Water**

**Analysis Batch: 119381**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

**Prep Batch: 115675**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
1,2,3,4,7,8-HxCDD	1000	1090		pg/L		109	56 - 146	3	20	
1,2,3,6,7,8-HxCDD	1000	1110		pg/L		111	73 - 144	2	20	
1,2,3,7,8,9-HxCDD	1000	1030		pg/L		103	71 - 151	2	20	
1,2,3,4,7,8-HxCDF	1000	1140		pg/L		114	75 - 131	1	20	
1,2,3,6,7,8-HxCDF	1000	1150		pg/L		115	76 - 133	3	20	
1,2,3,7,8,9-HxCDF	1000	1050		pg/L		105	77 - 142	3	20	
2,3,4,6,7,8-HxCDF	1000	1120		pg/L		112	80 - 137	3	20	
1,2,3,4,6,7,8-HpCDD	1000	1170		pg/L		117	78 - 139	1	20	
1,2,3,4,6,7,8-HpCDF	1000	1120		pg/L		112	79 - 133	0	20	
1,2,3,4,7,8,9-HpCDF	1000	1090		pg/L		109	83 - 130	1	20	
OCDD	2000	2280		pg/L		114	80 - 132	0	20	
OCDF	2000	2350		pg/L		118	72 - 140	1	20	

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	79		40 - 135
13C-2,3,7,8-TCDF	86		40 - 135
13C-1,2,3,7,8-PeCDD	75		40 - 135
13C-1,2,3,7,8-PeCDF	84		40 - 135
13C-1,2,3,6,7,8-HxCDD	86		40 - 135
13C-1,2,3,4,7,8-HxCDF	83		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	75		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	82		40 - 135
13C-OCDD	63		40 - 135

## Method: 6020A - Metals (ICP/MS)

**Lab Sample ID: MB 160-259572/1-A**

**Matrix: Water**

**Analysis Batch: 260702**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 259572**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	1.2	ug/L		07/07/16 12:43	07/14/16 18:52	2
Chromium	ND		10	1.0	ug/L		07/07/16 12:43	07/14/16 18:52	2
Thallium	ND		2.0	0.55	ug/L		07/07/16 12:43	07/14/16 18:52	2
Lithium	ND		5.0	1.1	ug/L		07/07/16 12:43	07/14/16 18:52	2

**Lab Sample ID: LCS 160-259572/2-A**

**Matrix: Water**

**Analysis Batch: 260702**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 259572**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
							Limits	RPD
Arsenic	1000	1030		ug/L		103	80 - 120	
Chromium	1000	1030		ug/L		103	80 - 120	
Thallium	200	200		ug/L		100	80 - 120	
Lithium	1000	1050		ug/L		105	80 - 120	

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 6020A - Metals (ICP/MS) (Continued)

**Lab Sample ID: 160-17910-2 MS**

**Matrix: Water**

**Analysis Batch: 260702**

**Client Sample ID: MW-8 20160621-01**

**Prep Type: Total/NA**

**Prep Batch: 259572**

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Arsenic	15		1000	1040		ug/L		103	75 - 125
Chromium	ND		1000	1010		ug/L		101	75 - 125
Thallium	ND		200	197		ug/L		98	75 - 125
Lithium	2.2	J	1000	1050		ug/L		105	75 - 125

**Lab Sample ID: 160-17910-2 MSD**

**Matrix: Water**

**Analysis Batch: 260702**

**Client Sample ID: MW-8 20160621-01**

**Prep Type: Total/NA**

**Prep Batch: 259572**

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Arsenic	15		1000	1040		ug/L		102	75 - 125	1	20
Chromium	ND		1000	997		ug/L		100	75 - 125	2	20
Thallium	ND		200	194		ug/L		97	75 - 125	2	20
Lithium	2.2	J	1000	1020		ug/L		102	75 - 125	2	20

**Lab Sample ID: 160-17910-2 MS**

**Matrix: Water**

**Analysis Batch: 260702**

**Client Sample ID: MW-8 20160621-01**

**Prep Type: Dissolved**

**Prep Batch: 259572**

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Arsenic	15		1000	1040		ug/L		103	75 - 125
Chromium	1.1	J	1000	1020		ug/L		102	75 - 125
Thallium	ND		200	194		ug/L		97	75 - 125
Lithium	2.1	J	1000	1030		ug/L		103	75 - 125

**Lab Sample ID: 160-17910-2 MSD**

**Matrix: Water**

**Analysis Batch: 260702**

**Client Sample ID: MW-8 20160621-01**

**Prep Type: Dissolved**

**Prep Batch: 259572**

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Arsenic	15		1000	1050		ug/L		104	75 - 125	1	20
Chromium	1.1	J	1000	1020		ug/L		102	75 - 125	0	20
Thallium	ND		200	196		ug/L		98	75 - 125	1	20
Lithium	2.1	J	1000	1050		ug/L		105	75 - 125	2	20

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

**Lab Sample ID: MB 160-260315/1-A**

**Matrix: Water**

**Analysis Batch: 260971**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 260315**

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Gross Alpha	0.2405	U	0.476	0.476	3.00	0.847	pCi/L	07/13/16 09:22	07/18/16 07:29	1
Gross Beta	0.05378	U	0.462	0.462	4.00	0.819	pCi/L	07/13/16 09:22	07/18/16 07:29	1

TestAmerica St. Louis

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

**Lab Sample ID: LCS 160-260315/2-A**  
**Matrix: Water**  
**Analysis Batch: 260971**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 260315**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	49.9	43.46		6.42	3.00	1.62	pCi/L	87	73 - 133

**Lab Sample ID: LCSB 160-260315/3-A**  
**Matrix: Water**  
**Analysis Batch: 260971**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 260315**

Analyte	Spike Added	LCSB Result	LCSB Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	92.4	92.77		9.81	4.00	0.869	pCi/L	100	75 - 125

**Lab Sample ID: 160-17910-2 MS**  
**Matrix: Water**  
**Analysis Batch: 260970**

**Client Sample ID: MW-8 20160621-01**  
**Prep Type: Total/NA**  
**Prep Batch: 260315**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	0.791	U G	217	218.9		30.5	3.00	5.84	pCi/L	101	60 - 140

**Lab Sample ID: 160-17910-2 MSBT**  
**Matrix: Water**  
**Analysis Batch: 260970**

**Client Sample ID: MW-8 20160621-01**  
**Prep Type: Total/NA**  
**Prep Batch: 260315**

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	1.50	U G	402	392.6	G	41.5	4.00	4.11	pCi/L	98	60 - 140

**Lab Sample ID: 160-17910-2 MSBTD**  
**Matrix: Water**  
**Analysis Batch: 260970**

**Client Sample ID: MW-8 20160621-01**  
**Prep Type: Total/NA**  
**Prep Batch: 260315**

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	1.50	U G	402	405.1		42.8	4.00	3.82	pCi/L	101	60 - 140	0.15	1

**Lab Sample ID: 160-17910-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 260970**

**Client Sample ID: MW-8 20160621-01**  
**Prep Type: Total/NA**  
**Prep Batch: 260315**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Alpha	0.791	U G	217	215.4		30.1	3.00	5.36	pCi/L	99	60 - 140	0.06	1

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-258186/1-A**  
**Matrix: Water**  
**Analysis Batch: 258947**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 258186**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Americium-241	-6.057	U	16.3	16.3		27.2	pCi/L	06/27/16 15:24	07/01/16 17:27	1
Cesium-137	1.898	U	9.03	9.03	20.0	15.4	pCi/L	06/27/16 15:24	07/01/16 17:27	1
Cobalt-60	2.471	U	7.00	7.00		8.60	pCi/L	06/27/16 15:24	07/01/16 17:27	1
<b>Other Detected Radionuclides</b>										
Other Detected Radionuclides	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Other Detected Radionuclide	None						pCi/L	06/27/16 15:24	07/01/16 17:27	1

**Lab Sample ID: LCS 160-258186/2-A**  
**Matrix: Water**  
**Analysis Batch: 258946**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 258186**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Americium-241	137000	133200		15400		309	pCi/L	98	90 - 111
Cesium-137	47700	45550		4560	20.0	123	pCi/L	95	90 - 111
Cobalt-60	43200	41920		4140		62.0	pCi/L	97	89 - 110

**Lab Sample ID: 160-17910-1 DU**  
**Matrix: Water**  
**Analysis Batch: 258947**

**Client Sample ID: MW-5 20160620-01**  
**Prep Type: Total/NA**  
**Prep Batch: 258186**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total	RL	MDC	Unit	RER	RER
					Uncert. (2σ+/-)					Limit
Americium-241	-12.9	U	7.089	U	16.6		27.6	pCi/L	0.81	1
Cesium-137	-0.755	U	-8.103	U	7.53	20.0	16.9	pCi/L	0.54	1
Cobalt-60	-2.14	U	6.147		4.55		4.78	pCi/L	0.65	1
<b>Other Detected Radionuclides</b>										
Other Detected Radionuclides	Sample Result	Sample Qual	DU Result	DU Qual	Total	RL	MDC	Unit	RER	RER
					Uncert. (2σ+/-)					Limit
Other Detected Radionuclide	None		None					pCi/L		

# QC Association Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## GC/MS Semi VOA

### Prep Batch: 257883

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-1	MW-5 20160620-01	Total/NA	Water	3510C	
160-17910-2	MW-8 20160621-01	Total/NA	Water	3510C	
160-17910-3	MW-2 20160621-01	Total/NA	Water	3510C	
160-17910-4	EB-1 20160621-01	Total/NA	Water	3510C	
160-17910-6	MW-3 20160620-01	Total/NA	Water	3510C	
MB 160-257883/1-A	Method Blank	Total/NA	Water	3510C	
LCS 160-257883/2-A	Lab Control Sample	Total/NA	Water	3510C	
160-17910-2 MS	MW-8 20160621-01	Total/NA	Water	3510C	
160-17910-2 MSD	MW-8 20160621-01	Total/NA	Water	3510C	

### Analysis Batch: 259970

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-1	MW-5 20160620-01	Total/NA	Water	8270D SIM	257883
160-17910-2	MW-8 20160621-01	Total/NA	Water	8270D SIM	257883
160-17910-3	MW-2 20160621-01	Total/NA	Water	8270D SIM	257883
160-17910-4	EB-1 20160621-01	Total/NA	Water	8270D SIM	257883
160-17910-6	MW-3 20160620-01	Total/NA	Water	8270D SIM	257883
MB 160-257883/1-A	Method Blank	Total/NA	Water	8270D SIM	257883
LCS 160-257883/2-A	Lab Control Sample	Total/NA	Water	8270D SIM	257883
160-17910-2 MS	MW-8 20160621-01	Total/NA	Water	8270D SIM	257883
160-17910-2 MSD	MW-8 20160621-01	Total/NA	Water	8270D SIM	257883

## GC Semi VOA

### Prep Batch: 182465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-1	MW-5 20160620-01	Total/NA	Water	3510C	
MB 180-182465/1-A	Method Blank	Total/NA	Water	3510C	

### Analysis Batch: 182610

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-1	MW-5 20160620-01	Total/NA	Water	8082	182465
MB 180-182465/1-A	Method Blank	Total/NA	Water	8082	182465

## Specialty Organics

### Prep Batch: 115602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-1	MW-5 20160620-01	Total/NA	Water	8290	
160-17910-2	MW-8 20160621-01	Total/NA	Water	8290	
160-17910-3	MW-2 20160621-01	Total/NA	Water	8290	
MB 320-115602/1-A	Method Blank	Total/NA	Water	8290	
LCS 320-115602/2-A	Lab Control Sample	Total/NA	Water	8290	
160-17910-2 MS	MW-8 20160621-01	Total/NA	Water	8290	
160-17910-2 MSD	MW-8 20160621-01	Total/NA	Water	8290	

### Prep Batch: 115675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-4	EB-1 20160621-01	Total/NA	Water	8290	
160-17910-6	MW-3 20160620-01	Total/NA	Water	8290	

TestAmerica St. Louis

# QC Association Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Specialty Organics (Continued)

### Prep Batch: 115675 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-115675/1-A	Method Blank	Total/NA	Water	8290	
LCS 320-115675/2-A	Lab Control Sample	Total/NA	Water	8290	
LCS 320-115675/3-A	Lab Control Sample Dup	Total/NA	Water	8290	

### Analysis Batch: 119381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-4	EB-1 20160621-01	Total/NA	Water	8290A	115675
160-17910-6	MW-3 20160620-01	Total/NA	Water	8290A	115675
MB 320-115675/1-A	Method Blank	Total/NA	Water	8290A	115675
LCS 320-115675/2-A	Lab Control Sample	Total/NA	Water	8290A	115675
LCS 320-115675/3-A	Lab Control Sample Dup	Total/NA	Water	8290A	115675

### Analysis Batch: 119384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-1	MW-5 20160620-01	Total/NA	Water	8290A	115602
160-17910-2	MW-8 20160621-01	Total/NA	Water	8290A	115602
160-17910-3	MW-2 20160621-01	Total/NA	Water	8290A	115602
MB 320-115602/1-A	Method Blank	Total/NA	Water	8290A	115602
LCS 320-115602/2-A	Lab Control Sample	Total/NA	Water	8290A	115602
160-17910-2 MS	MW-8 20160621-01	Total/NA	Water	8290A	115602
160-17910-2 MSD	MW-8 20160621-01	Total/NA	Water	8290A	115602

## Metals

### Prep Batch: 259572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-1	MW-5 20160620-01	Dissolved	Water	3010A	
160-17910-1	MW-5 20160620-01	Total/NA	Water	3010A	
160-17910-2	MW-8 20160621-01	Dissolved	Water	3010A	
160-17910-2	MW-8 20160621-01	Total/NA	Water	3010A	
160-17910-3	MW-2 20160621-01	Dissolved	Water	3010A	
160-17910-3	MW-2 20160621-01	Total/NA	Water	3010A	
160-17910-4	EB-1 20160621-01	Total/NA	Water	3010A	
160-17910-6	MW-3 20160620-01	Dissolved	Water	3010A	
160-17910-6	MW-3 20160620-01	Total/NA	Water	3010A	
MB 160-259572/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-259572/2-A	Lab Control Sample	Total/NA	Water	3010A	
160-17910-2 MS	MW-8 20160621-01	Dissolved	Water	3010A	
160-17910-2 MS	MW-8 20160621-01	Total/NA	Water	3010A	
160-17910-2 MSD	MW-8 20160621-01	Dissolved	Water	3010A	
160-17910-2 MSD	MW-8 20160621-01	Total/NA	Water	3010A	

### Analysis Batch: 260702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-1	MW-5 20160620-01	Dissolved	Water	6020A	259572
160-17910-1	MW-5 20160620-01	Total/NA	Water	6020A	259572
160-17910-2	MW-8 20160621-01	Dissolved	Water	6020A	259572
160-17910-2	MW-8 20160621-01	Total/NA	Water	6020A	259572
160-17910-3	MW-2 20160621-01	Dissolved	Water	6020A	259572
160-17910-3	MW-2 20160621-01	Total/NA	Water	6020A	259572

TestAmerica St. Louis

# QC Association Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Metals (Continued)

### Analysis Batch: 260702 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-4	EB-1 20160621-01	Total/NA	Water	6020A	259572
160-17910-6	MW-3 20160620-01	Dissolved	Water	6020A	259572
160-17910-6	MW-3 20160620-01	Total/NA	Water	6020A	259572
MB 160-259572/1-A	Method Blank	Total/NA	Water	6020A	259572
LCS 160-259572/2-A	Lab Control Sample	Total/NA	Water	6020A	259572
160-17910-2 MS	MW-8 20160621-01	Dissolved	Water	6020A	259572
160-17910-2 MS	MW-8 20160621-01	Total/NA	Water	6020A	259572
160-17910-2 MSD	MW-8 20160621-01	Dissolved	Water	6020A	259572
160-17910-2 MSD	MW-8 20160621-01	Total/NA	Water	6020A	259572

## Rad

### Prep Batch: 258186

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-1	MW-5 20160620-01	Total/NA	Water	Fill_Geo-0	
160-17910-2	MW-8 20160621-01	Total/NA	Water	Fill_Geo-0	
160-17910-3	MW-2 20160621-01	Total/NA	Water	Fill_Geo-0	
160-17910-4	EB-1 20160621-01	Total/NA	Water	Fill_Geo-0	
160-17910-6	MW-3 20160620-01	Total/NA	Water	Fill_Geo-0	
MB 160-258186/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-258186/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
160-17910-1 DU	MW-5 20160620-01	Total/NA	Water	Fill_Geo-0	

### Prep Batch: 260315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17910-1	MW-5 20160620-01	Total/NA	Water	Evaporation	
160-17910-2	MW-8 20160621-01	Total/NA	Water	Evaporation	
160-17910-3	MW-2 20160621-01	Total/NA	Water	Evaporation	
160-17910-4	EB-1 20160621-01	Total/NA	Water	Evaporation	
160-17910-6	MW-3 20160620-01	Total/NA	Water	Evaporation	
MB 160-260315/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-260315/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-260315/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
160-17910-2 MS	MW-8 20160621-01	Total/NA	Water	Evaporation	
160-17910-2 MSBT	MW-8 20160621-01	Total/NA	Water	Evaporation	
160-17910-2 MSBTD	MW-8 20160621-01	Total/NA	Water	Evaporation	
160-17910-2 MSD	MW-8 20160621-01	Total/NA	Water	Evaporation	

# Surrogate Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		FBP (10-104)	NBZ (21-110)	TPH (22-103)
160-17910-1	MW-5 20160620-01	64	62	73
160-17910-2	MW-8 20160621-01	76	71	84
160-17910-2 MS	MW-8 20160621-01	63	56	58
160-17910-2 MSD	MW-8 20160621-01	58	47	58
160-17910-3	MW-2 20160621-01	60	52	71
160-17910-4	EB-1 20160621-01	57	47	71
160-17910-6	MW-3 20160620-01	62	49	61
LCS 160-257883/2-A	Lab Control Sample	69	75	94
MB 160-257883/1-A	Method Blank	65	75	72

#### Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)

NBZ = Nitrobenzene-d5 (Surr)

TPH = Terphenyl-d14 (Surr)

## Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		DCB1 (16-150)	DCB2 (16-150)
160-17910-1	MW-5 20160620-01	119	117
MB 180-182465/1-A	Method Blank	80	84

#### Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)



# Isotope Dilution Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 160-17910-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (40-135)	TCDF (40-135)	PeCDD (40-135)	PeCDF1 (40-135)	HxCDD2 (40-135)	HxCDF1 (40-135)	HpCDD (40-135)	HpCDF1 (40-135)
160-17910-1	MW-5 20160620-01	81	87	81	88	84	85	80	88
160-17910-2	MW-8 20160621-01	77	86	82	87	82	79	77	84
160-17910-2 MS	MW-8 20160621-01	74	81	74	81	79	75	70	77
160-17910-2 MSD	MW-8 20160621-01	76	82	74	82	83	83	76	81
160-17910-3	MW-2 20160621-01	78	87	80	88	85	84	78	83
160-17910-4	EB-1 20160621-01	74	83	70	78	77	77	65	74
160-17910-6	MW-3 20160620-01	78	86	73	81	85	83	72	79
LCS 320-115602/2-A	Lab Control Sample	78	85	75	82	84	79	72	78
LCS 320-115675/2-A	Lab Control Sample	78	83	75	80	83	79	74	80
LCSD 320-115675/3-A	Lab Control Sample Dup	79	86	75	84	86	83	75	82
MB 320-115602/1-A	Method Blank	79	87	85	89	81	79	72	78
MB 320-115675/1-A	Method Blank	77	83	78	82	83	80	75	81

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OCDD (40-135)
160-17910-1	MW-5 20160620-01	68
160-17910-2	MW-8 20160621-01	66
160-17910-2 MS	MW-8 20160621-01	62
160-17910-2 MSD	MW-8 20160621-01	66
160-17910-3	MW-2 20160621-01	67
160-17910-4	EB-1 20160621-01	53
160-17910-6	MW-3 20160620-01	58
LCS 320-115602/2-A	Lab Control Sample	61
LCS 320-115675/2-A	Lab Control Sample	63
LCSD 320-115675/3-A	Lab Control Sample Dup	63
MB 320-115602/1-A	Method Blank	60
MB 320-115675/1-A	Method Blank	64

#### Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- OCDD = 13C-OCDD

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-20123-1  
Client Project/Site: Former Reid Hospital Site

For:  
Environmental Resources Management Inc  
8425 Woodfield Crossing Blvd  
Suite 560-W  
Indianapolis, Indiana 46240

Attn: Mr. Aaron Friedrich



---

Authorized for release by:  
8/15/2016 4:41:40 PM  
Erika Gish, Project Manager II  
(314)298-8566  
[erika.gish@testamericainc.com](mailto:erika.gish@testamericainc.com)

Designee for  
Elizabeth Hoerchler, Project Mgmt. Assistant  
(314)298-8566  
[elizabeth.hoerchler@testamericainc.com](mailto:elizabeth.hoerchler@testamericainc.com)

### LINKS

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

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

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# Definitions/Glossary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

## Qualifiers

### Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

## Glossary

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

# Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

**Job ID: 320-20123-1**

**Laboratory: TestAmerica Sacramento**

**Narrative**

## CASE NARRATIVE

**Client: Environmental Resources Management Inc**

**Project: Former Reid Hospital Site**

**Report Number: 320-20123-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

### **RECEIPT**

The samples were received on 7/11/2016 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 12.7° C.

### **Receipt Exceptions**

The following samples was received at the laboratory outside the required temperature criteria: MW-7 20160707-01 (320-20123-1) and MW-1 20160707-01 (320-20123-2). The cooler was sent on Friday, received on Monday; cooler was not marked for Saturday delivery. All ice in the cooler has melted. The client instructed the lab to proceed.

### **DIOXINS AND FURANS (HRGC/HRMS)**

Samples MW-7 20160707-01 (320-20123-1) and MW-1 20160707-01 (320-20123-2) were analyzed for Dioxins and Furans (HRGC/HRMS) in accordance with SW846 8290A. The samples were prepared on 07/13/2016 and analyzed on 08/12/2016.

Several analytes were detected in method blank MB 320-117755/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the

## Case Narrative

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

---

### Job ID: 320-20123-1 (Continued)

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#### Laboratory: TestAmerica Sacramento (Continued)

MDL and/or RL, the result has been flagged.

No other analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# Detection Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

## Client Sample ID: MW-7 20160707-01

## Lab Sample ID: 320-20123-1

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,7,8,9-HxCDD	1.0	J B	47	0.28	pg/L	1		8290A	Total/NA
1,2,3,4,7,8-HxCDF	0.74	J B	47	0.23	pg/L	1		8290A	Total/NA
1,2,3,6,7,8-HxCDF	0.72	J B	47	0.21	pg/L	1		8290A	Total/NA
1,2,3,7,8,9-HxCDF	0.46	J q B	47	0.24	pg/L	1		8290A	Total/NA
2,3,4,6,7,8-HxCDF	0.97	J	47	0.23	pg/L	1		8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	2.5	J B	47	0.32	pg/L	1		8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	1.5	J B	47	0.22	pg/L	1		8290A	Total/NA
1,2,3,4,7,8,9-HpCDF	0.90	J B	47	0.28	pg/L	1		8290A	Total/NA
OCDD	18	J B	95	0.49	pg/L	1		8290A	Total/NA
OCDF	3.7	J B	95	0.56	pg/L	1		8290A	Total/NA

## Client Sample ID: MW-1 20160707-01

## Lab Sample ID: 320-20123-2

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	0.90	J	9.5	0.36	pg/L	1		8290A	Total/NA
2,3,7,8-TCDF	0.73	J	9.5	0.24	pg/L	1		8290A	Total/NA
1,2,3,4,7,8-HxCDD	1.3	J	47	0.25	pg/L	1		8290A	Total/NA
1,2,3,6,7,8-HxCDD	2.7	J B	47	0.24	pg/L	1		8290A	Total/NA
1,2,3,7,8,9-HxCDD	5.3	J B	47	0.21	pg/L	1		8290A	Total/NA
1,2,3,4,7,8-HxCDF	1.2	J B	47	0.22	pg/L	1		8290A	Total/NA
1,2,3,6,7,8-HxCDF	1.6	J B	47	0.20	pg/L	1		8290A	Total/NA
1,2,3,7,8,9-HxCDF	0.80	J B	47	0.23	pg/L	1		8290A	Total/NA
2,3,4,6,7,8-HxCDF	1.0	J	47	0.22	pg/L	1		8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	43	J B	47	0.70	pg/L	1		8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	15	J B	47	0.33	pg/L	1		8290A	Total/NA
1,2,3,4,7,8,9-HpCDF	1.3	J B	47	0.42	pg/L	1		8290A	Total/NA
OCDD	640	B	95	0.60	pg/L	1		8290A	Total/NA
OCDF	19	J B	95	0.36	pg/L	1		8290A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

**Client Sample ID: MW-7 20160707-01**

**Lab Sample ID: 320-20123-1**

**Date Collected: 07/07/16 13:20**

**Matrix: Water**

**Date Received: 07/11/16 09:45**

**Method: 8290A - Dioxins and Furans (HRGC/HRMS)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		9.5	0.30	pg/L		07/13/16 15:04	08/12/16 07:47	1
2,3,7,8-TCDF	ND		9.5	0.18	pg/L		07/13/16 15:04	08/12/16 07:47	1
1,2,3,7,8-PeCDD	ND		47	0.50	pg/L		07/13/16 15:04	08/12/16 07:47	1
1,2,3,7,8-PeCDF	ND		47	0.29	pg/L		07/13/16 15:04	08/12/16 07:47	1
2,3,4,7,8-PeCDF	ND		47	0.29	pg/L		07/13/16 15:04	08/12/16 07:47	1
1,2,3,4,7,8-HxCDD	ND		47	0.33	pg/L		07/13/16 15:04	08/12/16 07:47	1
1,2,3,6,7,8-HxCDD	ND		47	0.32	pg/L		07/13/16 15:04	08/12/16 07:47	1
<b>1,2,3,7,8,9-HxCDD</b>	<b>1.0</b>	<b>J B</b>	47	0.28	pg/L		07/13/16 15:04	08/12/16 07:47	1
<b>1,2,3,4,7,8-HxCDF</b>	<b>0.74</b>	<b>J B</b>	47	0.23	pg/L		07/13/16 15:04	08/12/16 07:47	1
<b>1,2,3,6,7,8-HxCDF</b>	<b>0.72</b>	<b>J B</b>	47	0.21	pg/L		07/13/16 15:04	08/12/16 07:47	1
<b>1,2,3,7,8,9-HxCDF</b>	<b>0.46</b>	<b>J q B</b>	47	0.24	pg/L		07/13/16 15:04	08/12/16 07:47	1
<b>2,3,4,6,7,8-HxCDF</b>	<b>0.97</b>	<b>J</b>	47	0.23	pg/L		07/13/16 15:04	08/12/16 07:47	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>2.5</b>	<b>J B</b>	47	0.32	pg/L		07/13/16 15:04	08/12/16 07:47	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>1.5</b>	<b>J B</b>	47	0.22	pg/L		07/13/16 15:04	08/12/16 07:47	1
<b>1,2,3,4,7,8,9-HpCDF</b>	<b>0.90</b>	<b>J B</b>	47	0.28	pg/L		07/13/16 15:04	08/12/16 07:47	1
<b>OCDD</b>	<b>18</b>	<b>J B</b>	95	0.49	pg/L		07/13/16 15:04	08/12/16 07:47	1
<b>OCDF</b>	<b>3.7</b>	<b>J B</b>	95	0.56	pg/L		07/13/16 15:04	08/12/16 07:47	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	88		40 - 135				07/13/16 15:04	08/12/16 07:47	1
13C-2,3,7,8-TCDF	93		40 - 135				07/13/16 15:04	08/12/16 07:47	1
13C-1,2,3,7,8-PeCDD	78		40 - 135				07/13/16 15:04	08/12/16 07:47	1
13C-1,2,3,7,8-PeCDF	86		40 - 135				07/13/16 15:04	08/12/16 07:47	1
13C-1,2,3,6,7,8-HxCDD	96		40 - 135				07/13/16 15:04	08/12/16 07:47	1
13C-1,2,3,4,7,8-HxCDF	99		40 - 135				07/13/16 15:04	08/12/16 07:47	1
13C-1,2,3,4,6,7,8-HpCDD	94		40 - 135				07/13/16 15:04	08/12/16 07:47	1
13C-1,2,3,4,6,7,8-HpCDF	95		40 - 135				07/13/16 15:04	08/12/16 07:47	1
13C-OCDD	83		40 - 135				07/13/16 15:04	08/12/16 07:47	1

**Client Sample ID: MW-1 20160707-01**

**Lab Sample ID: 320-20123-2**

**Date Collected: 07/07/16 15:00**

**Matrix: Water**

**Date Received: 07/11/16 09:45**

**Method: 8290A - Dioxins and Furans (HRGC/HRMS)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>2,3,7,8-TCDD</b>	<b>0.90</b>	<b>J</b>	9.5	0.36	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>2,3,7,8-TCDF</b>	<b>0.73</b>	<b>J</b>	9.5	0.24	pg/L		07/13/16 15:04	08/12/16 08:33	1
1,2,3,7,8-PeCDD	ND		47	0.49	pg/L		07/13/16 15:04	08/12/16 08:33	1
1,2,3,7,8-PeCDF	ND		47	0.27	pg/L		07/13/16 15:04	08/12/16 08:33	1
2,3,4,7,8-PeCDF	ND		47	0.28	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>1,2,3,4,7,8-HxCDD</b>	<b>1.3</b>	<b>J</b>	47	0.25	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>1,2,3,6,7,8-HxCDD</b>	<b>2.7</b>	<b>J B</b>	47	0.24	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>1,2,3,7,8,9-HxCDD</b>	<b>5.3</b>	<b>J B</b>	47	0.21	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>1,2,3,4,7,8-HxCDF</b>	<b>1.2</b>	<b>J B</b>	47	0.22	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>1,2,3,6,7,8-HxCDF</b>	<b>1.6</b>	<b>J B</b>	47	0.20	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>1,2,3,7,8,9-HxCDF</b>	<b>0.80</b>	<b>J B</b>	47	0.23	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>2,3,4,6,7,8-HxCDF</b>	<b>1.0</b>	<b>J</b>	47	0.22	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>1,2,3,4,6,7,8-HpCDD</b>	<b>43</b>	<b>J B</b>	47	0.70	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>1,2,3,4,6,7,8-HpCDF</b>	<b>15</b>	<b>J B</b>	47	0.33	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>1,2,3,4,7,8,9-HpCDF</b>	<b>1.3</b>	<b>J B</b>	47	0.42	pg/L		07/13/16 15:04	08/12/16 08:33	1

TestAmerica Sacramento



# Client Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

**Client Sample ID: MW-1 20160707-01**

**Lab Sample ID: 320-20123-2**

**Date Collected: 07/07/16 15:00**

**Matrix: Water**

**Date Received: 07/11/16 09:45**

**Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)**

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>OCDD</b>	<b>640</b>	<b>B</b>	95	0.60	pg/L		07/13/16 15:04	08/12/16 08:33	1
<b>OCDF</b>	<b>19</b>	<b>J B</b>	95	0.36	pg/L		07/13/16 15:04	08/12/16 08:33	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>13C-2,3,7,8-TCDD</i>	<i>88</i>		<i>40 - 135</i>				<i>07/13/16 15:04</i>	<i>08/12/16 08:33</i>	<i>1</i>
<i>13C-2,3,7,8-TCDF</i>	<i>92</i>		<i>40 - 135</i>				<i>07/13/16 15:04</i>	<i>08/12/16 08:33</i>	<i>1</i>
<i>13C-1,2,3,7,8-PeCDD</i>	<i>81</i>		<i>40 - 135</i>				<i>07/13/16 15:04</i>	<i>08/12/16 08:33</i>	<i>1</i>
<i>13C-1,2,3,7,8-PeCDF</i>	<i>88</i>		<i>40 - 135</i>				<i>07/13/16 15:04</i>	<i>08/12/16 08:33</i>	<i>1</i>
<i>13C-1,2,3,6,7,8-HxCDD</i>	<i>92</i>		<i>40 - 135</i>				<i>07/13/16 15:04</i>	<i>08/12/16 08:33</i>	<i>1</i>
<i>13C-1,2,3,4,7,8-HxCDF</i>	<i>100</i>		<i>40 - 135</i>				<i>07/13/16 15:04</i>	<i>08/12/16 08:33</i>	<i>1</i>
<i>13C-1,2,3,4,6,7,8-HpCDD</i>	<i>97</i>		<i>40 - 135</i>				<i>07/13/16 15:04</i>	<i>08/12/16 08:33</i>	<i>1</i>
<i>13C-1,2,3,4,6,7,8-HpCDF</i>	<i>97</i>		<i>40 - 135</i>				<i>07/13/16 15:04</i>	<i>08/12/16 08:33</i>	<i>1</i>
<i>13C-OCDD</i>	<i>94</i>		<i>40 - 135</i>				<i>07/13/16 15:04</i>	<i>08/12/16 08:33</i>	<i>1</i>

# Isotope Dilution Summary

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (40-135)	TCDF (40-135)	PeCDD (40-135)	PeCDF1 (40-135)	HxCDD2 (40-135)	HxCDF1 (40-135)	HpCDD (40-135)	HpCDF1 (40-135)
320-20123-1	MW-7 20160707-01	88	93	78	86	96	99	94	95
320-20123-2	MW-1 20160707-01	88	92	81	88	92	100	97	97
LCS 320-117755/2-A	Lab Control Sample	84	90	76	85	92	95	86	90
LCSD 320-117755/3-A	Lab Control Sample Dup	87	92	77	87	95	98	88	92
MB 320-117755/1-A	Method Blank	85	90	76	84	94	98	87	92

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OCDD (40-135)
320-20123-1	MW-7 20160707-01	83
320-20123-2	MW-1 20160707-01	94
LCS 320-117755/2-A	Lab Control Sample	78
LCSD 320-117755/3-A	Lab Control Sample Dup	79
MB 320-117755/1-A	Method Blank	78

#### Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- OCDD = 13C-OCDD

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS)

**Lab Sample ID: MB 320-117755/1-A**

**Matrix: Water**

**Analysis Batch: 121797**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 117755**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		10	0.35	pg/L		07/13/16 15:04	08/12/16 05:29	1
2,3,7,8-TCDF	ND		10	0.22	pg/L		07/13/16 15:04	08/12/16 05:29	1
1,2,3,7,8-PeCDD	ND		50	0.46	pg/L		07/13/16 15:04	08/12/16 05:29	1
1,2,3,7,8-PeCDF	ND		50	0.27	pg/L		07/13/16 15:04	08/12/16 05:29	1
2,3,4,7,8-PeCDF	ND		50	0.28	pg/L		07/13/16 15:04	08/12/16 05:29	1
1,2,3,4,7,8-HxCDD	ND		50	0.28	pg/L		07/13/16 15:04	08/12/16 05:29	1
1,2,3,6,7,8-HxCDD	0.979	J	50	0.27	pg/L		07/13/16 15:04	08/12/16 05:29	1
1,2,3,7,8,9-HxCDD	0.529	J q	50	0.24	pg/L		07/13/16 15:04	08/12/16 05:29	1
1,2,3,4,7,8-HxCDF	0.832	J	50	0.34	pg/L		07/13/16 15:04	08/12/16 05:29	1
1,2,3,6,7,8-HxCDF	0.702	J	50	0.32	pg/L		07/13/16 15:04	08/12/16 05:29	1
1,2,3,7,8,9-HxCDF	0.946	J	50	0.35	pg/L		07/13/16 15:04	08/12/16 05:29	1
2,3,4,6,7,8-HxCDF	ND		50	0.34	pg/L		07/13/16 15:04	08/12/16 05:29	1
1,2,3,4,6,7,8-HpCDD	1.71	J	50	0.41	pg/L		07/13/16 15:04	08/12/16 05:29	1
1,2,3,4,6,7,8-HpCDF	1.14	J q	50	0.33	pg/L		07/13/16 15:04	08/12/16 05:29	1
1,2,3,4,7,8,9-HpCDF	1.05	J q	50	0.42	pg/L		07/13/16 15:04	08/12/16 05:29	1
OCDD	16.0	J	100	0.45	pg/L		07/13/16 15:04	08/12/16 05:29	1
OCDF	3.37	J	100	0.58	pg/L		07/13/16 15:04	08/12/16 05:29	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	85		40 - 135	07/13/16 15:04	08/12/16 05:29	1
13C-2,3,7,8-TCDF	90		40 - 135	07/13/16 15:04	08/12/16 05:29	1
13C-1,2,3,7,8-PeCDD	76		40 - 135	07/13/16 15:04	08/12/16 05:29	1
13C-1,2,3,7,8-PeCDF	84		40 - 135	07/13/16 15:04	08/12/16 05:29	1
13C-1,2,3,6,7,8-HxCDD	94		40 - 135	07/13/16 15:04	08/12/16 05:29	1
13C-1,2,3,4,7,8-HxCDF	98		40 - 135	07/13/16 15:04	08/12/16 05:29	1
13C-1,2,3,4,6,7,8-HpCDD	87		40 - 135	07/13/16 15:04	08/12/16 05:29	1
13C-1,2,3,4,6,7,8-HpCDF	92		40 - 135	07/13/16 15:04	08/12/16 05:29	1
13C-OCDD	78		40 - 135	07/13/16 15:04	08/12/16 05:29	1

**Lab Sample ID: LCS 320-117755/2-A**

**Matrix: Water**

**Analysis Batch: 121797**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 117755**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	200	231		pg/L		116	64 - 142
2,3,7,8-TCDF	200	228		pg/L		114	71 - 142
1,2,3,7,8-PeCDD	1000	1170		pg/L		117	71 - 140
1,2,3,7,8-PeCDF	1000	1160		pg/L		116	76 - 135
2,3,4,7,8-PeCDF	1000	1120		pg/L		112	74 - 137
1,2,3,4,7,8-HxCDD	1000	1060		pg/L		106	56 - 146
1,2,3,6,7,8-HxCDD	1000	1150		pg/L		115	73 - 144
1,2,3,7,8,9-HxCDD	1000	1080		pg/L		108	71 - 151
1,2,3,4,7,8-HxCDF	1000	1100		pg/L		110	75 - 131
1,2,3,6,7,8-HxCDF	1000	1180		pg/L		118	76 - 133
1,2,3,7,8,9-HxCDF	1000	1090		pg/L		109	77 - 142
2,3,4,6,7,8-HxCDF	1000	1160		pg/L		116	80 - 137
1,2,3,4,6,7,8-HpCDD	1000	1120		pg/L		112	78 - 139
1,2,3,4,6,7,8-HpCDF	1000	1100		pg/L		110	79 - 133

TestAmerica Sacramento

# QC Sample Results

Client: Environmental Resources Management Inc  
 Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

## Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

**Lab Sample ID: LCS 320-117755/2-A**  
**Matrix: Water**  
**Analysis Batch: 121797**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 117755**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,7,8,9-HpCDF	1000	1140		pg/L		114	83 - 130
OCDD	2000	2210		pg/L		111	80 - 132
OCDF	2000	2260		pg/L		113	72 - 140

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	84		40 - 135
13C-2,3,7,8-TCDF	90		40 - 135
13C-1,2,3,7,8-PeCDD	76		40 - 135
13C-1,2,3,7,8-PeCDF	85		40 - 135
13C-1,2,3,6,7,8-HxCDD	92		40 - 135
13C-1,2,3,4,7,8-HxCDF	95		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	86		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	90		40 - 135
13C-OCDD	78		40 - 135

**Lab Sample ID: LCSD 320-117755/3-A**  
**Matrix: Water**  
**Analysis Batch: 121797**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 117755**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	200	234		pg/L		117	64 - 142	1	20
2,3,7,8-TCDF	200	231		pg/L		115	71 - 142	1	20
1,2,3,7,8-PeCDD	1000	1170		pg/L		117	71 - 140	0	20
1,2,3,7,8-PeCDF	1000	1170		pg/L		117	76 - 135	1	20
2,3,4,7,8-PeCDF	1000	1120		pg/L		112	74 - 137	0	20
1,2,3,4,7,8-HxCDD	1000	1000		pg/L		100	56 - 146	6	20
1,2,3,6,7,8-HxCDD	1000	1160		pg/L		116	73 - 144	2	20
1,2,3,7,8,9-HxCDD	1000	1070		pg/L		107	71 - 151	1	20
1,2,3,4,7,8-HxCDF	1000	1100		pg/L		110	75 - 131	0	20
1,2,3,6,7,8-HxCDF	1000	1150		pg/L		115	76 - 133	2	20
1,2,3,7,8,9-HxCDF	1000	1080		pg/L		108	77 - 142	1	20
2,3,4,6,7,8-HxCDF	1000	1140		pg/L		114	80 - 137	2	20
1,2,3,4,6,7,8-HpCDD	1000	1140		pg/L		114	78 - 139	1	20
1,2,3,4,6,7,8-HpCDF	1000	1130		pg/L		113	79 - 133	2	20
1,2,3,4,7,8,9-HpCDF	1000	1150		pg/L		115	83 - 130	1	20
OCDD	2000	2310		pg/L		116	80 - 132	4	20
OCDF	2000	2370		pg/L		118	72 - 140	4	20

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-2,3,7,8-TCDD	87		40 - 135
13C-2,3,7,8-TCDF	92		40 - 135
13C-1,2,3,7,8-PeCDD	77		40 - 135
13C-1,2,3,7,8-PeCDF	87		40 - 135
13C-1,2,3,6,7,8-HxCDD	95		40 - 135
13C-1,2,3,4,7,8-HxCDF	98		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	88		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	92		40 - 135
13C-OCDD	79		40 - 135

TestAmerica Sacramento

# QC Association Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

## Specialty Organics

### Prep Batch: 117755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-20123-1	MW-7 20160707-01	Total/NA	Water	8290	
320-20123-2	MW-1 20160707-01	Total/NA	Water	8290	
MB 320-117755/1-A	Method Blank	Total/NA	Water	8290	
LCS 320-117755/2-A	Lab Control Sample	Total/NA	Water	8290	
LCSD 320-117755/3-A	Lab Control Sample Dup	Total/NA	Water	8290	

### Analysis Batch: 121797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-20123-1	MW-7 20160707-01	Total/NA	Water	8290A	117755
320-20123-2	MW-1 20160707-01	Total/NA	Water	8290A	117755
MB 320-117755/1-A	Method Blank	Total/NA	Water	8290A	117755
LCS 320-117755/2-A	Lab Control Sample	Total/NA	Water	8290A	117755
LCSD 320-117755/3-A	Lab Control Sample Dup	Total/NA	Water	8290A	117755

# Lab Chronicle

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

**Client Sample ID: MW-7 20160707-01**

**Date Collected: 07/07/16 13:20**

**Date Received: 07/11/16 09:45**

**Lab Sample ID: 320-20123-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290			1055.8 mL	20 uL	117755	07/13/16 15:04	DXD	TAL SAC
Total/NA	Analysis	8290A		1			121797	08/12/16 07:47	KSS	TAL SAC

**Client Sample ID: MW-1 20160707-01**

**Date Collected: 07/07/16 15:00**

**Date Received: 07/11/16 09:45**

**Lab Sample ID: 320-20123-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290			1053.5 mL	20 uL	117755	07/13/16 15:04	DXD	TAL SAC
Total/NA	Analysis	8290A		1			121797	08/12/16 08:33	KSS	TAL SAC

## Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Certification Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

## Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-16
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	08-31-17
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

## Laboratory: TestAmerica St. Louis

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Louisiana	NELAP	6	04080	06-30-17

# Method Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

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Method	Method Description	Protocol	Laboratory
8290A	Dioxins and Furans (HRGC/HRMS)	SW846	TAL SAC

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**Protocol References:**

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

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600





# Sample Summary

Client: Environmental Resources Management Inc  
Project/Site: Former Reid Hospital Site

TestAmerica Job ID: 320-20123-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-20123-1	MW-7 20160707-01	Water	07/07/16 13:20	07/11/16 09:45
320-20123-2	MW-1 20160707-01	Water	07/07/16 15:00	07/11/16 09:45

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>>> Select a Laboratory <<<

# Chain of Custody Record

## TestAmerica

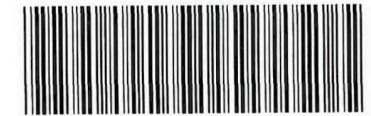
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica  
13715 Rider Trail North  
Earth City, MO 63045

Regulatory Program:  DW  NPDES  RCRA  Other:

TestAmerica Laboratories, Inc.

Client Contact		Project Manager: Michael Franks				Site Contact: Chris Burrows		Date:		COC No:		
ERM		Tel/Fax:				Lab Contact:		Carrier:		1 of 1 COCs		
8425 Woodfield Crossing Suite 560 W		Analysis Turnaround Time				Filtered Sample (Y/N)		Perform MS / MSD (Y/N)		Sampler:		
Indianapolis, IN 46240		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS										
(317) 706-2000 Phone		TAT if different from Below _____										
(317) 706-2010 FAX		<input checked="" type="checkbox"/> 2 weeks										
Project Name: Former Reid Hospital		<input type="checkbox"/> 1 week										
Site: 1401 Chester Blvd, Richmond, IN		<input type="checkbox"/> 2 days				Sample Specific Notes:		Job / SDG No.:		For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____		
P O # 0315592		<input type="checkbox"/> 1 day										
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.						
MW-7 20160707-01		7-7-16	1320	G	WT	2	X					
MW-1 20160707-01		7-7-16	1500	G	WT	1	X					
Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)										
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.		<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months										
Special Instructions/QC Requirements & Comments: TAT should match initial sample collected 6/20/16												
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 13.4		Corr'd: 17.7		Therm ID No.: 12				
Relinquished by: Chris Burrows		Company: ERM		Date/Time: 7-7-16/1545		Received by: [Signature]		Company: IRWS		Date/Time: 7/11/16 0945		
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:		
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:		



320-20123 Chain of Custody

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8/15/2016



# Login Sample Receipt Checklist

Client: Environmental Resources Management Inc

Job Number: 320-20123-1

**Login Number: 20123**

**List Source: TestAmerica Sacramento**

**List Number: 1**

**Creator: Turpen, Troy**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	781970
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.	False	Cooler temperature outside required temperature criteria.
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?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



*Appendix G*  
*Dioxin/Furan TEQ Calculations -*  
*2014 Phase II ESA Data*

**APPENDIX G - TABLE 1  
TOXICITY EQUIVALENCE CALCULATIONS FOR DIOXINS IN SOIL (2014)  
FORMER REID HOSPITAL SITE  
RICHMOND, INDIANA**

Sample	Congener Name	CAS Number	Result (ng/Kg)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 MDL)	TEQ (ND = 0)
<b>SB-5 (0-2)</b>	2,3,7,8-TCDD	1746-01-6	1	J	1	1	1	1
	1,2,3,7,8-PeCDD	40321-76-4	5	U	1	5	2.5	0
	1,2,3,4,7,8-HxCDD	39227-28-6	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDD	57653-85-7	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDD	19408-74-3	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	1.4	J	0.01	0.014	0.014	0.014
	OCDD	3268-87-9	11	B	0.0003	0.0033	0.0033	0.0033
	2,3,7,8-TCDF	51207-31-9	5	U	0.1	0.5	0.25	0
	1,2,3,7,8-PeCDF	57117-41-6	5	U	0.03	0.15	0.075	0
	2,3,4,7,8-PeCDF	57117-31-4	7.6		0.3	2.28	2.28	2.28
	1,2,3,4,7,8-HxCDF	70648-26-9	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDF	57117-44-9	5	U	0.1	0.5	0.25	0
	2,3,4,6,7,8-HxCDF	72918-21-9	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDF	60851-34-5	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	0.51	JB	0.01	0.0051	0.0051	0.0051
	1,2,3,4,7,8,9-HpCDF	55673-89-7	42		0.01	0.42	0.42	0.42
OCDF	39001-02-0	1.5	JB	0.0003	0.00045	0.00045	0.00045	
<b>SB-5 (0-2) TEQ</b>						<b>12.87285</b>	<b>8.29785</b>	<b>3.72285</b>
<b>SB-6 (0-2)</b>	2,3,7,8-TCDD	1746-01-6	1	U	1	1	0.5	0
	1,2,3,7,8-PeCDD	40321-76-4	5	U	1	5	2.5	0
	1,2,3,4,7,8-HxCDD	39227-28-6	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDD	57653-85-7	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDD	19408-74-3	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	66		0.01	0.66	0.66	0.66
	OCDD	3268-87-9	1100		0.0003	0.33	0.33	0.33
	2,3,7,8-TCDF	51207-31-9	1.7		0.1	0.17	0.17	0.17
	1,2,3,7,8-PeCDF	57117-41-6	5	U	0.03	0.15	0.075	0
	2,3,4,7,8-PeCDF	57117-31-4	6.3		0.3	1.89	1.89	1.89
	1,2,3,4,7,8-HxCDF	70648-26-9	7.6		0.1	0.76	0.76	0.76
	1,2,3,6,7,8-HxCDF	57117-44-9	5	U	0.1	0.5	0.25	0
	2,3,4,6,7,8-HxCDF	72918-21-9	6.3		0.1	0.63	0.63	0.63
	1,2,3,7,8,9-HxCDF	60851-34-5	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	15		0.01	0.15	0.15	0.15
	1,2,3,4,7,8,9-HpCDF	55673-89-7	5	U	0.01	0.05	0.025	0
OCDF	39001-02-0	14		0.0003	0.0042	0.0042	0.0042	
<b>SB-6 (0-2) TEQ</b>						<b>13.2942</b>	<b>8.9442</b>	<b>4.5942</b>

**APPENDIX G - TABLE 1  
TOXICITY EQUIVALENCE CALCULATIONS FOR DIOXINS IN SOIL (2014)  
FORMER REID HOSPITAL SITE  
RICHMOND, INDIANA**

Sample	Congener Name	CAS Number	Result (ng/Kg)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 MDL)	TEQ (ND = 0)
<b>SB-7 (0-2)</b>	2,3,7,8-TCDD	1746-01-6	1	U	1	1	0.5	0
	1,2,3,7,8-PeCDD	40321-76-4	5	U	1	5	2.5	0
	1,2,3,4,7,8-HxCDD	39227-28-6	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDD	57653-85-7	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDD	19408-74-3	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	8.9		0.01	0.089	0.089	0.089
	OCDD	3268-87-9	80		0.0003	0.024	0.024	0.024
	2,3,7,8-TCDF	51207-31-9	1	U	0.1	0.1	0.05	0
	1,2,3,7,8-PeCDF	57117-41-6	5	U	0.03	0.15	0.075	0
	2,3,4,7,8-PeCDF	57117-31-4	5	U	0.3	1.5	0.75	0
	1,2,3,4,7,8-HxCDF	70648-26-9	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDF	57117-44-9	5	U	0.1	0.5	0.25	0
	2,3,4,6,7,8-HxCDF	72918-21-9	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDF	60851-34-5	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	5	U	0.01	0.05	0.025	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	5	U	0.01	0.05	0.025	0
OCDF	39001-02-0	10	U	0.0003	0.003	0.0015	0	
<b>SB-7 (0-2) TEQ</b>						<b>11.466</b>	<b>5.7895</b>	<b>0.113</b>
<b>SB-13 (0-2)</b>	2,3,7,8-TCDD	1746-01-6	6.7	U	1	6.7	3.35	0
	1,2,3,7,8-PeCDD	40321-76-4	5	U	1	5	2.5	0
	1,2,3,4,7,8-HxCDD	39227-28-6	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDD	57653-85-7	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDD	19408-74-3	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	43		0.01	0.43	0.43	0.43
	OCDD	3268-87-9	450		0.0003	0.135	0.135	0.135
	2,3,7,8-TCDF	51207-31-9	8.6	U	0.1	0.86	0.43	0
	1,2,3,7,8-PeCDF	57117-41-6	5	U	0.03	0.15	0.075	0
	2,3,4,7,8-PeCDF	57117-31-4	5	U	0.3	1.5	0.75	0
	1,2,3,4,7,8-HxCDF	70648-26-9	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDF	57117-44-9	5	U	0.1	0.5	0.25	0
	2,3,4,6,7,8-HxCDF	72918-21-9	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDF	60851-34-5	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	14		0.01	0.14	0.14	0.14
	1,2,3,4,7,8,9-HpCDF	55673-89-7	5	U	0.01	0.05	0.025	0
OCDF	39001-02-0	18		0.0003	0.0054	0.0054	0.0054	
<b>SB-13 (0-2) TEQ</b>						<b>18.4704</b>	<b>9.5904</b>	<b>0.7104</b>

**APPENDIX G - TABLE 1  
TOXICITY EQUIVALENCE CALCULATIONS FOR DIOXINS IN SOIL (2014)  
FORMER REID HOSPITAL SITE  
RICHMOND, INDIANA**

Sample	Congener Name	CAS Number	Result (ng/Kg)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 MDL)	TEQ (ND = 0)
<b>SB-5 Dup (0-2)</b>	2,3,7,8-TCDD	1746-01-6	2.6		1	2.6	2.6	2.6
	1,2,3,7,8-PeCDD	40321-76-4	11		1	11	11	11
	1,2,3,4,7,8-HxCDD	39227-28-6	6.9		0.1	0.69	0.69	0.69
<b>* EMPC</b>	1,2,3,6,7,8-HxCDD	57653-85-7	15		0.1	1.5	1.5	1.5
	1,2,3,7,8,9-HxCDD	19408-74-3	7.8		0.1	0.78	0.78	0.78
	1,2,3,4,6,7,8-HpCDD	35822-46-9	97		0.01	0.97	0.97	0.97
	OCDD	3268-87-9	540		0.0003	0.162	0.162	0.162
	2,3,7,8-TCDF	51207-31-9	29		0.1	2.9	2.9	2.9
<b>*EMPC</b>	1,2,3,7,8-PeCDF	57117-41-6	35		0.03	1.05	1.05	1.05
	2,3,4,7,8-PeCDF	57117-31-4	67		0.3	20.1	20.1	20.1
	1,2,3,4,7,8-HxCDF	70648-26-9	62		0.1	6.2	6.2	6.2
	1,2,3,6,7,8-HxCDF	57117-44-9	41		0.1	4.1	4.1	4.1
	2,3,4,6,7,8-HxCDF	72918-21-9	62		0.1	6.2	6.2	6.2
	1,2,3,7,8,9-HxCDF	60851-34-5	14		0.1	1.4	1.4	1.4
	1,2,3,4,6,7,8-HpCDF	67562-39-4	250		0.01	2.5	2.5	2.5
<b>*EMPC</b>	1,2,3,4,7,8,9-HpCDF	55673-89-7	9.3		0.01	0.093	0.093	0.093
	OCDF	39001-02-0	57		0.0003	0.0171	0.0171	0.0171
<b>SB-5 Dup (0-2) TEQ</b>						<b>62.2621</b>	<b>62.2621</b>	<b>62.2621</b>
<b>SB-14 (0-2)</b>	2,3,7,8-TCDD	1746-01-6	1	U	1	1	0.5	0
	1,2,3,7,8-PeCDD	40321-76-4	5	U	1	5	2.5	0
	1,2,3,4,7,8-HxCDD	39227-28-6	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDD	57653-85-7	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDD	19408-74-3	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	13		0.01	0.13	0.13	0.13
	OCDD	3268-87-9	120		0.0003	0.036	0.036	0.036
	2,3,7,8-TCDF	51207-31-9	1	U	0.1	0.1	0.05	0
	1,2,3,7,8-PeCDF	57117-41-6	5	U	0.03	0.15	0.075	0
	2,3,4,7,8-PeCDF	57117-31-4	5	U	0.3	1.5	0.75	0
	1,2,3,4,7,8-HxCDF	70648-26-9	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDF	57117-44-9	5	U	0.1	0.5	0.25	0
	2,3,4,6,7,8-HxCDF	72918-21-9	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDF	60851-34-5	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	5	U	0.01	0.05	0.025	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	5	U	0.01	0.05	0.025	0
OCDF	39001-02-0	10	U	0.0003	0.003	0.0015	0	
<b>SB-14 (0-2) TEQ</b>						<b>11.519</b>	<b>5.8425</b>	<b>0.166</b>

**APPENDIX G - TABLE 1  
TOXICITY EQUIVALENCE CALCULATIONS FOR DIOXINS IN SOIL (2014)  
FORMER REID HOSPITAL SITE  
RICHMOND, INDIANA**

Sample	Congener Name	CAS Number	Result (ng/Kg)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 MDL)	TEQ (ND = 0)
<b>SB-5 (18-20)</b>	2,3,7,8-TCDD	1746-01-6	1	U	1	1	0.5	0
	1,2,3,7,8-PeCDD	40321-76-4	5	U	1	5	2.5	0
	1,2,3,4,7,8-HxCDD	39227-28-6	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDD	57653-85-7	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDD	19408-74-3	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	5	U	0.01	0.05	0.025	0
	OCDD	3268-87-9	18		0.0003	0.0054	0.0054	0.0054
	2,3,7,8-TCDF	51207-31-9	1	U	0.1	0.1	0.05	0
	1,2,3,7,8-PeCDF	57117-41-6	5	U	0.03	0.15	0.075	0
	2,3,4,7,8-PeCDF	57117-31-4	5	U	0.3	1.5	0.75	0
	1,2,3,4,7,8-HxCDF	70648-26-9	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDF	57117-44-9	5	U	0.1	0.5	0.25	0
	2,3,4,6,7,8-HxCDF	72918-21-9	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDF	60851-34-5	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	5	U	0.01	0.05	0.025	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	5	U	0.01	0.05	0.025	0
	OCDF	39001-02-0	10	U	0.0003	0.003	0.0015	0
<b>SB-5 (18-20) TEQ</b>						<b>11.4084</b>	<b>5.7069</b>	<b>0.0054</b>
<b>SB-6 (20-22)</b>	2,3,7,8-TCDD	1746-01-6	1	U	1	1	0.5	0
	1,2,3,7,8-PeCDD	40321-76-4	5	U	1	5	2.5	0
	1,2,3,4,7,8-HxCDD	39227-28-6	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDD	57653-85-7	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDD	19408-74-3	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	5	U	0.01	0.05	0.025	0
	OCDD	3268-87-9	51		0.0003	0.0153	0.0153	0.0153
	2,3,7,8-TCDF	51207-31-9	1	U	0.1	0.1	0.05	0
	1,2,3,7,8-PeCDF	57117-41-6	5	U	0.03	0.15	0.075	0
	2,3,4,7,8-PeCDF	57117-31-4	5	U	0.3	1.5	0.75	0
	1,2,3,4,7,8-HxCDF	70648-26-9	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDF	57117-44-9	5	U	0.1	0.5	0.25	0
	2,3,4,6,7,8-HxCDF	72918-21-9	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDF	60851-34-5	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	5	U	0.01	0.05	0.025	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	5	U	0.01	0.05	0.025	0
	OCDF	39001-02-0	10	U	0.0003	0.003	0.0015	0
<b>SB-6 (20-22) TEQ</b>						<b>11.4183</b>	<b>5.7168</b>	<b>0.0153</b>



**APPENDIX G - TABLE 1**  
**TOXICITY EQUIVALENCE CALCULATIONS FOR DIOXINS IN SOIL (2014)**  
**FORMER REID HOSPITAL SITE**  
**RICHMOND, INDIANA**

Sample	Congener Name	CAS Number	Result (ng/Kg)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 MDL)	TEQ (ND = 0)
<b>SB-7 (16-18)</b>	2,3,7,8-TCDD	1746-01-6	1	U	1	1	0.5	0
	1,2,3,7,8-PeCDD	40321-76-4	5	U	1	5	2.5	0
	1,2,3,4,7,8-HxCDD	39227-28-6	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDD	57653-85-7	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDD	19408-74-3	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	7.9		0.01	0.079	0.079	0.079
	OCDD	3268-87-9	110		0.0003	0.033	0.033	0.033
	2,3,7,8-TCDF	51207-31-9	1	U	0.1	0.1	0.05	0
	1,2,3,7,8-PeCDF	57117-41-6	5	U	0.03	0.15	0.075	0
	2,3,4,7,8-PeCDF	57117-31-4	5	U	0.3	1.5	0.75	0
	1,2,3,4,7,8-HxCDF	70648-26-9	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDF	57117-44-9	5	U	0.1	0.5	0.25	0
	2,3,4,6,7,8-HxCDF	72918-21-9	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDF	60851-34-5	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	5	U	0.01	0.05	0.025	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	5	U	0.01	0.05	0.025	0
OCDF	39001-02-0	10	U	0.0003	0.003	0.0015	0	
<b>SB-7 (16-18) TEQ</b>						<b>11.465</b>	<b>5.7885</b>	<b>0.112</b>
<b>SB-13 (6-8)</b>	2,3,7,8-TCDD	1746-01-6	1	U	1	1	0.5	0
	1,2,3,7,8-PeCDD	40321-76-4	5	U	1	5	2.5	0
	1,2,3,4,7,8-HxCDD	39227-28-6	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDD	57653-85-7	12		0.1	1.2	1.2	1.2
	1,2,3,7,8,9-HxCDD	19408-74-3	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	480		0.01	4.8	4.8	4.8
	OCDD	3268-87-9	8700		0.0003	2.61	2.61	2.61
	2,3,7,8-TCDF	51207-31-9	1	U	0.1	0.1	0.05	0
	1,2,3,7,8-PeCDF	57117-41-6	5	U	0.03	0.15	0.075	0
	2,3,4,7,8-PeCDF	57117-31-4	5	U	0.3	1.5	0.75	0
	1,2,3,4,7,8-HxCDF	70648-26-9	5	U	0.1	0.5	0.25	0
	1,2,3,6,7,8-HxCDF	57117-44-9	5	U	0.1	0.5	0.25	0
	2,3,4,6,7,8-HxCDF	72918-21-9	5	U	0.1	0.5	0.25	0
	1,2,3,7,8,9-HxCDF	60851-34-5	5	U	0.1	0.5	0.25	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	49		0.01	0.49	0.49	0.49
	1,2,3,4,7,8,9-HpCDF	55673-89-7	5	U	0.01	0.05	0.025	0
OCDF	39001-02-0	340		0.0003	0.102	0.102	0.102	
<b>SB-13 (6-8) TEQ</b>						<b>20.002</b>	<b>14.602</b>	<b>9.202</b>

**APPENDIX G - TABLE 1  
TOXICITY EQUIVALENCE CALCULATIONS FOR DIOXINS IN SOIL (2014)  
FORMER REID HOSPITAL SITE  
RICHMOND, INDIANA**

Sample	Congener Name	CAS Number	Result (ng/Kg)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 MDL)	TEQ (ND = 0)	
<b>SB-14 (6-8)</b>	2,3,7,8-TCDD	1746-01-6	1	U	1	1	0.5	0	
	1,2,3,7,8-PeCDD	40321-76-4	5	U	1	5	2.5	0	
	1,2,3,4,7,8-HxCDD	39227-28-6	5	U	0.1	0.5	0.25	0	
	1,2,3,6,7,8-HxCDD	57653-85-7	5	U	0.1	0.5	0.25	0	
	1,2,3,7,8,9-HxCDD	19408-74-3	5	U	0.1	0.5	0.25	0	
	1,2,3,4,6,7,8-HpCDD	35822-46-9	5	U	0.01	0.05	0.025	0	
	OCDD	3268-87-9	<b>24</b>		0.0003	0.0072	0.0072	0.0072	
	2,3,7,8-TCDF	51207-31-9	1	U	0.1	0.1	0.05	0	
	1,2,3,7,8-PeCDF	57117-41-6	5	U	0.03	0.15	0.075	0	
	2,3,4,7,8-PeCDF	57117-31-4	5	U	0.3	1.5	0.75	0	
	1,2,3,4,7,8-HxCDF	70648-26-9	5	U	0.1	0.5	0.25	0	
	1,2,3,6,7,8-HxCDF	57117-44-9	5	U	0.1	0.5	0.25	0	
	2,3,4,6,7,8-HxCDF	72918-21-9	5	U	0.1	0.5	0.25	0	
	1,2,3,7,8,9-HxCDF	60851-34-5	5	U	0.1	0.5	0.25	0	
	1,2,3,4,6,7,8-HpCDF	67562-39-4	5	U	0.01	0.05	0.025	0	
	1,2,3,4,7,8,9-HpCDF	55673-89-7	5	U	0.01	0.05	0.025	0	
	OCDF	39001-02-0	10	U	0.0003	0.003	0.0015	0	
	<b>SB-14 (6-8) TEQ</b>						<b>11.4102</b>	<b>5.7087</b>	<b>0.0072</b>

Notes:  
 TEF = Toxicity Equivalent Factors  
 TEQ = Toxicity Equivalence  
 ND = No detection  
 MDL = Method Detection Limit  
 All values in nanograms per kilogram (ng/Kg)  
 EMPC = Estimated Maximum Possible Concentration  
 DCSL = Direct Contact Screening Level  
 MTG = Migration to Groundwater  
 TEFs obtained from US EPA's *Recommended Toxicity Equivalence Factors for Human Health Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds* dated December 2010

Average TEQ (all samples)	11.41	5.71	0.01
Average TEQ (shallow samples)	21.65	16.79	11.93
Average TEQ (deep samples)	13.14	7.50	1.87
Indiana Residential DCSL	<b>69</b>	<b>69</b>	<b>69</b>
Indiana Commercial DCSL	<b>220</b>	<b>220</b>	<b>220</b>
Indiana Residential MTG	<b>300</b>	<b>300</b>	<b>300</b>

**APPENDIX G TABLE 2**  
**TOXICITY EQUIVALENCE CALCULATION FOR DIOXINS IN GROUNDWATER (2014)**  
**FORMER REID HOSPITAL SITE**  
**RICHMOND, INDIANA**

Sample ID	Congener Name	CAS Number	Result (pg/L)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 mdl)	TEQ (ND = 0)
<b>SB-5</b>	2,3,7,8-TCDD	1746-01-6	10	U	1	10	5	0
	1,2,3,7,8-PeCDD	40321-76-4	50	U	1	50	25	0
	1,2,3,4,7,8-HxCDD	39227-28-6	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDD	57653-85-7	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDD	19408-74-3	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	50	U	0.01	0.5	0.25	0
	OCDD	3268-87-9	150		0.0003	0.045	0.045	0.045
	2,3,7,8-TCDF	51207-31-9	10	U	0.1	1	0.5	0
	1,2,3,7,8-PeCDF	57117-41-6	50	U	0.03	1.5	0.75	0
	2,3,4,7,8-PeCDF	57117-31-4	50	U	0.3	15	7.5	0
	1,2,3,4,7,8-HxCDF	70648-26-9	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDF	57117-44-9	50	U	0.1	5	2.5	0
	2,3,4,6,7,8-HxCDF	72918-21-9	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDF	60851-34-5	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	50	U	0.01	0.5	0.25	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	50	U	0.01	0.5	0.25	0
	OCDF	39001-02-0	100	U	0.0003	0.03	0.015	0
<b>SB-5 TEQ</b>						<b>114.075</b>	<b>57.06</b>	<b>0.045</b>
<b>SB-5 Dup</b>	2,3,7,8-TCDD	1746-01-6	10	U	1	10	5	0
	1,2,3,7,8-PeCDD	40321-76-4	50	U	1	50	25	0
	1,2,3,4,7,8-HxCDD	39227-28-6	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDD	57653-85-7	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDD	19408-74-3	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	50	U	0.01	0.5	0.25	0
	OCDD	3268-87-9	100	U	0.0003	0.03	0.015	0
	2,3,7,8-TCDF	51207-31-9	10	U	0.1	1	0.5	0
	1,2,3,7,8-PeCDF	57117-41-6	50	U	0.03	1.5	0.75	0
	2,3,4,7,8-PeCDF	57117-31-4	50	U	0.3	15	7.5	0
	1,2,3,4,7,8-HxCDF	70648-26-9	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDF	57117-44-9	50	U	0.1	5	2.5	0
	2,3,4,6,7,8-HxCDF	72918-21-9	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDF	60851-34-5	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	50	U	0.01	0.5	0.25	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	50	U	0.01	0.5	0.25	0
	OCDF	39001-02-0	100	U	0.0003	0.03	0.015	0
<b>SB-5 Dup TEQ</b>						<b>114.06</b>	<b>57.03</b>	<b>0</b>

**APPENDIX G TABLE 2**  
**TOXICITY EQUIVALENCE CALCULATION FOR DIOXINS IN GROUNDWATER (2014)**  
**FORMER REID HOSPITAL SITE**  
**RICHMOND, INDIANA**

Sample ID	Congener Name	CAS Number	Result (pg/L)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 mdl)	TEQ (ND = 0)	
<b>SB-6</b>	2,3,7,8-TCDD	1746-01-6	10	U	1	10	5	0	
	1,2,3,7,8-PeCDD	40321-76-4	50	U	1	50	25	0	
	1,2,3,4,7,8-HxCDD	39227-28-6	50	U	0.1	5	2.5	0	
	1,2,3,6,7,8-HxCDD	57653-85-7	50	U	0.1	5	2.5	0	
	1,2,3,7,8,9-HxCDD	19408-74-3	50	U	0.1	5	2.5	0	
	1,2,3,4,6,7,8-HpCDD	35822-46-9	50	U	0.01	0.5	0.25	0	
	OCDD	3268-87-9	100	U	0.0003	0.03	0.015	0	
	2,3,7,8-TCDF	51207-31-9	10	U	0.1	1	0.5	0	
	1,2,3,7,8-PeCDF	57117-41-6	50	U	0.03	1.5	0.75	0	
	2,3,4,7,8-PeCDF	57117-31-4	50	U	0.3	15	7.5	0	
	1,2,3,4,7,8-HxCDF	70648-26-9	50	U	0.1	5	2.5	0	
	1,2,3,6,7,8-HxCDF	57117-44-9	50	U	0.1	5	2.5	0	
	2,3,4,6,7,8-HxCDF	72918-21-9	50	U	0.1	5	2.5	0	
	1,2,3,7,8,9-HxCDF	60851-34-5	50	U	0.1	5	2.5	0	
	1,2,3,4,6,7,8-HpCDF	67562-39-4	50	U	0.01	0.5	0.25	0	
	1,2,3,4,7,8,9-HpCDF	55673-89-7	50	U	0.01	0.5	0.25	0	
	OCDF	39001-02-0	100	U	0.0003	0.03	0.015	0	
	<b>SB-6 TEQ</b>						<b>114.06</b>	<b>57.03</b>	<b>0</b>
	<b>SB-7</b>	2,3,7,8-TCDD	1746-01-6	10	U	1	10	5	0
1,2,3,7,8-PeCDD		40321-76-4	50	U	1	50	25	0	
1,2,3,4,7,8-HxCDD		39227-28-6	50	U	0.1	5	2.5	0	
1,2,3,6,7,8-HxCDD		57653-85-7	50	U	0.1	5	2.5	0	
1,2,3,7,8,9-HxCDD		19408-74-3	50	U	0.1	5	2.5	0	
1,2,3,4,6,7,8-HpCDD		35822-46-9	50	U	0.01	0.5	0.25	0	
OCDD		3268-87-9	100	U	0.0003	0.03	0.015	0	
2,3,7,8-TCDF		51207-31-9	10	U	0.1	1	0.5	0	
1,2,3,7,8-PeCDF		57117-41-6	50	U	0.03	1.5	0.75	0	
2,3,4,7,8-PeCDF		57117-31-4	50	U	0.3	15	7.5	0	
1,2,3,4,7,8-HxCDF		70648-26-9	50	U	0.1	5	2.5	0	
1,2,3,6,7,8-HxCDF		57117-44-9	50	U	0.1	5	2.5	0	
2,3,4,6,7,8-HxCDF		72918-21-9	50	U	0.1	5	2.5	0	
1,2,3,7,8,9-HxCDF		60851-34-5	50	U	0.1	5	2.5	0	
1,2,3,4,6,7,8-HpCDF		67562-39-4	50	U	0.01	0.5	0.25	0	
1,2,3,4,7,8,9-HpCDF		55673-89-7	50	U	0.01	0.5	0.25	0	
OCDF		39001-02-0	100	U	0.0003	0.03	0.015	0	
<b>SB-7 TEQ</b>						<b>114.06</b>	<b>57.03</b>	<b>0</b>	

**APPENDIX G TABLE 2**  
**TOXICITY EQUIVALECE CALCULATION FOR DIOXINS IN GROUNDWATER (2014)**  
**FORMER REID HOSPITAL SITE**  
**RICHMOND, INDIANA**

Sample ID	Congener Name	CAS Number	Result (pg/L)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 mdl)	TEQ (ND = 0)
<b>SB-8</b>	2,3,7,8-TCDD	1746-01-6	10	U	1	10	5	0
	1,2,3,7,8-PeCDD	40321-76-4	50	U	1	50	25	0
	1,2,3,4,7,8-HxCDD	39227-28-6	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDD	57653-85-7	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDD	19408-74-3	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	150		0.01	1.5	1.5	1.5
	OCDD	3268-87-9	2,600		0.0003	0.78	0.78	0.78
	2,3,7,8-TCDF	51207-31-9	10	U	0.1	1	0.5	0
	1,2,3,7,8-PeCDF	57117-41-6	50	U	0.03	1.5	0.75	0
	2,3,4,7,8-PeCDF	57117-31-4	50	U	0.3	15	7.5	0
	1,2,3,4,7,8-HxCDF	70648-26-9	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDF	57117-44-9	50	U	0.1	5	2.5	0
	2,3,4,6,7,8-HxCDF	72918-21-9	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDF	60851-34-5	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	50	U	0.01	0.5	0.25	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	50	U	0.01	0.5	0.25	0
OCDF	39001-02-0	100	U	0.0003	0.03	0.015	0	
<b>SB-8 TEQ</b>						<b>115.81</b>	<b>59.045</b>	<b>2.28</b>
<b>SB-9</b>	2,3,7,8-TCDD	1746-01-6	10	U	1	10	5	0
	1,2,3,7,8-PeCDD	40321-76-4	50	U	1	50	25	0
	1,2,3,4,7,8-HxCDD	39227-28-6	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDD	57653-85-7	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDD	19408-74-3	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	50	U	0.01	0.5	0.25	0
	OCDD	3268-87-9	100	U	0.0003	0.03	0.015	0
	2,3,7,8-TCDF	51207-31-9	10	U	0.1	1	0.5	0
	1,2,3,7,8-PeCDF	57117-41-6	50	U	0.03	1.5	0.75	0
	2,3,4,7,8-PeCDF	57117-31-4	50	U	0.3	15	7.5	0
	1,2,3,4,7,8-HxCDF	70648-26-9	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDF	57117-44-9	50	U	0.1	5	2.5	0
	2,3,4,6,7,8-HxCDF	72918-21-9	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDF	60851-34-5	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	50	U	0.01	0.5	0.25	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	50	U	0.01	0.5	0.25	0
OCDF	39001-02-0	100	U	0.0003	0.03	0.015	0	
<b>SB-9 TEQ</b>						<b>114.06</b>	<b>57.03</b>	<b>0</b>

**APPENDIX G TABLE 2**  
**TOXICITY EQUIVALECE CALCULATION FOR DIOXINS IN GROUNDWATER (2014)**  
**FORMER REID HOSPITAL SITE**  
**RICHMOND, INDIANA**

Sample ID	Congener Name	CAS Number	Result (pg/L)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 mdl)	TEQ (ND = 0)
<b>SB-10</b>	2,3,7,8-TCDD	1746-01-6	10	U	1	10	5	0
	1,2,3,7,8-PeCDD	40321-76-4	50	U	1	50	25	0
	1,2,3,4,7,8-HxCDD	39227-28-6	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDD	57653-85-7	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDD	19408-74-3	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	50	U	0.01	0.5	0.25	0
	OCDD	3268-87-9	100	U	0.0003	0.03	0.015	0
	2,3,7,8-TCDF	51207-31-9	10	U	0.1	1	0.5	0
	1,2,3,7,8-PeCDF	57117-41-6	50	U	0.03	1.5	0.75	0
	2,3,4,7,8-PeCDF	57117-31-4	50	U	0.3	15	7.5	0
	1,2,3,4,7,8-HxCDF	70648-26-9	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDF	57117-44-9	50	U	0.1	5	2.5	0
	2,3,4,6,7,8-HxCDF	72918-21-9	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDF	60851-34-5	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	50	U	0.01	0.5	0.25	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	50	U	0.01	0.5	0.25	0
	OCDF	39001-02-0	100	U	0.0003	0.03	0.015	0
<b>SB-10 TEQ</b>						<b>114.06</b>	<b>57.03</b>	<b>0</b>
<b>SB-11</b>	2,3,7,8-TCDD	1746-01-6	10	U	1	10	5	0
	1,2,3,7,8-PeCDD	40321-76-4	50	U	1	50	25	0
	1,2,3,4,7,8-HxCDD	39227-28-6	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDD	57653-85-7	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDD	19408-74-3	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	50	U	0.01	0.5	0.25	0
	OCDD	3268-87-9	100	U	0.0003	0.03	0.015	0
	2,3,7,8-TCDF	51207-31-9	10	U	0.1	1	0.5	0
	1,2,3,7,8-PeCDF	57117-41-6	50	U	0.03	1.5	0.75	0
	2,3,4,7,8-PeCDF	57117-31-4	50	U	0.3	15	7.5	0
	1,2,3,4,7,8-HxCDF	70648-26-9	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDF	57117-44-9	50	U	0.1	5	2.5	0
	2,3,4,6,7,8-HxCDF	72918-21-9	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDF	60851-34-5	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	50	U	0.01	0.5	0.25	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	50	U	0.01	0.5	0.25	0
	OCDF	39001-02-0	100	U	0.0003	0.03	0.015	0
<b>SB-11 TEQ</b>						<b>114.06</b>	<b>57.03</b>	<b>0</b>

**APPENDIX G TABLE 2**  
**TOXICITY EQUIVALECE CALCULATION FOR DIOXINS IN GROUNDWATER (2014)**  
**FORMER REID HOSPITAL SITE**  
**RICHMOND, INDIANA**

Sample ID	Congener Name	CAS Number	Result (pg/L)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 mdl)	TEQ (ND = 0)
<b>SB-12</b>	2,3,7,8-TCDD	1746-01-6	10	U	1	10	5	0
	1,2,3,7,8-PeCDD	40321-76-4	50	U	1	50	25	0
	1,2,3,4,7,8-HxCDD	39227-28-6	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDD	57653-85-7	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDD	19408-74-3	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	50	U	0.01	0.5	0.25	0
	OCDD	3268-87-9	100	U	0.0003	0.03	0.015	0
	2,3,7,8-TCDF	51207-31-9	10	U	0.1	1	0.5	0
	1,2,3,7,8-PeCDF	57117-41-6	50	U	0.03	1.5	0.75	0
	2,3,4,7,8-PeCDF	57117-31-4	50	U	0.3	15	7.5	0
	1,2,3,4,7,8-HxCDF	70648-26-9	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDF	57117-44-9	50	U	0.1	5	2.5	0
	2,3,4,6,7,8-HxCDF	72918-21-9	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDF	60851-34-5	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	50	U	0.01	0.5	0.25	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	50	U	0.01	0.5	0.25	0
	OCDF	39001-02-0	100	U	0.0003	0.03	0.015	0
<b>SB-12 TEQ</b>						<b>114.06</b>	<b>57.03</b>	<b>0</b>
<b>SB-13</b>	2,3,7,8-TCDD	1746-01-6	10	U	1	10	5	0
	1,2,3,7,8-PeCDD	40321-76-4	50	U	1	50	25	0
	1,2,3,4,7,8-HxCDD	39227-28-6	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDD	57653-85-7	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDD	19408-74-3	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDD	35822-46-9	50	U	0.01	0.5	0.25	0
	OCDD	3268-87-9	100	U	0.0003	0.03	0.015	0
	2,3,7,8-TCDF	51207-31-9	10	U	0.1	1	0.5	0
	1,2,3,7,8-PeCDF	57117-41-6	50	U	0.03	1.5	0.75	0
	2,3,4,7,8-PeCDF	57117-31-4	50	U	0.3	15	7.5	0
	1,2,3,4,7,8-HxCDF	70648-26-9	50	U	0.1	5	2.5	0
	1,2,3,6,7,8-HxCDF	57117-44-9	50	U	0.1	5	2.5	0
	2,3,4,6,7,8-HxCDF	72918-21-9	50	U	0.1	5	2.5	0
	1,2,3,7,8,9-HxCDF	60851-34-5	50	U	0.1	5	2.5	0
	1,2,3,4,6,7,8-HpCDF	67562-39-4	50	U	0.01	0.5	0.25	0
	1,2,3,4,7,8,9-HpCDF	55673-89-7	50	U	0.01	0.5	0.25	0
	OCDF	39001-02-0	100	U	0.0003	0.03	0.015	0
<b>SB-13 TEQ</b>						<b>114.06</b>	<b>57.03</b>	<b>0</b>

**APPENDIX G TABLE 2**  
**TOXICITY EQUIVALENCE CALCULATION FOR DIOXINS IN GROUNDWATER (2014)**  
**FORMER REID HOSPITAL SITE**  
**RICHMOND, INDIANA**

Sample ID	Congener Name	CAS Number	Result (pg/L)	Qualifier	TEF	TEQ (ND = MDL)	TEQ (ND = 1/2 mdl)	TEQ (ND = 0)	
<b>SB-14</b>	2,3,7,8-TCDD	1746-01-6	10	U	1	10	5	0	
	1,2,3,7,8-PeCDD	40321-76-4	50	U	1	50	25	0	
	1,2,3,4,7,8-HxCDD	39227-28-6	50	U	0.1	5	2.5	0	
	1,2,3,6,7,8-HxCDD	57653-85-7	50	U	0.1	5	2.5	0	
	1,2,3,7,8,9-HxCDD	19408-74-3	50	U	0.1	5	2.5	0	
	1,2,3,4,6,7,8-HpCDD	35822-46-9	50	U	0.01	0.5	0.25	0	
	OCDD	3268-87-9	100	U	0.0003	0.03	0.015	0	
	2,3,7,8-TCDF	51207-31-9	10	U	0.1	1	0.5	0	
	1,2,3,7,8-PeCDF	57117-41-6	50	U	0.03	1.5	0.75	0	
	2,3,4,7,8-PeCDF	57117-31-4	50	U	0.3	15	7.5	0	
	1,2,3,4,7,8-HxCDF	70648-26-9	50	U	0.1	5	2.5	0	
	1,2,3,6,7,8-HxCDF	57117-44-9	50	U	0.1	5	2.5	0	
	2,3,4,6,7,8-HxCDF	72918-21-9	50	U	0.1	5	2.5	0	
	1,2,3,7,8,9-HxCDF	60851-34-5	50	U	0.1	5	2.5	0	
	1,2,3,4,6,7,8-HpCDF	67562-39-4	50	U	0.01	0.5	0.25	0	
	1,2,3,4,7,8,9-HpCDF	55673-89-7	50	U	0.01	0.5	0.25	0	
	OCDF	39001-02-0	100	U	0.0003	0.03	0.015	0	
	<b>SB-14 TEQ</b>						<b>114.06</b>	<b>57.03</b>	<b>0</b>

## Notes:

TEF = Toxicity Equivalent Factors

TEQ = Toxicity Equivalence

ND = No detection

MDL = Method Detection Limit

All values in picograms per liter (pg/L)

MCL = Maximum Contaminant Level

TEFs obtained from US EPA's *Recommended Toxicity Equivalence Factors for Human Health Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds* dated December 2010

Average TEQ	114.22	57.22	0.21
Indiana/ US EPA MCL	30	30	30



**APPENDIX G TABLE 3  
DIOXIN TOXICITY EQUIVALENCE (2014) CALCULATIONS SUMMARY TABLE  
FORMER REID HOSPITAL SITE  
RICHMOND, INDIANA**

Media	Reference	TEQ (ND = MDL)	TEQ (ND = 1/2 MDL)	TEQ (ND = 0)
Groundwater	Average TEQ	114.22	57.22	0.21
	Indiana/US EPA MCL	30	30	30
Soil	Average TEQ (all samples)	11.41	5.71	0.01
	Average TEQ (shallow samples)	21.74	16.88	12.02
	Average TEQ (deep samples)	13.14	7.50	1.87
	Indiana Residential DCSL	69	69	69
	Indiana Commercial DCSL	220	220	220
	Indiana Residential MTG	300	300	300

**Notes:**

ND= Non-detect

MDL= Method detection limit

TEQ= Toxicity equivalence

DCSL= Direct contact screening level

MTG= Migration to groundwater

MCL= Maximum contaminant level

Values in picograms per liter (pg/L) for groundwater and nanograms per kilogram (ng/Kg) for soil

Calculations based on US EPA's *Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk*

*Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds* - December 2010