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September 27, 2017 **VIA PRIVATE CARRIER**

Mr. James R. Carroll
Program Administrator
Land Restoration Program
Land Management Administration
Maryland Department of the Environment
1800 Washington Boulevard, Suite 625
Baltimore, Maryland 21230

Subject: Transmittal of the Block I Building A Basement Monitoring Report
Lockheed Martin Corporation; Middle River Complex
2323 Eastern Boulevard, Middle River, Baltimore County, Maryland

Dear Mr. Carroll:

For your review please find enclosed two hard copies with a CD of the above-referenced document. This report provides additional information regarding possible vapor-intrusion pathways and groundwater conditions in the Block I Building A basement at the Lockheed Martin Middle River Complex in Middle River, Maryland. This report describes additional air monitoring and groundwater sampling conducted to better understand the interaction of indoor air concentrations of contaminants, primarily trichloroethene, with possible infrastructure pathways and groundwater at the Middle River Complex. We respectfully request to receive Maryland Department of the Environment comments by November 8, 2017.

Please let me know if you have any questions. My office phone is (301) 548-2227.

Sincerely,

Lynnette Drake
Remediation Analyst, Environmental Remediation

cc: (via email without enclosure)
Gary Schold, MDE
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Block I Building A Basement Monitoring Report
Lockheed Martin Middle River Complex
2323 Eastern Boulevard
Middle River, Maryland

Prepared for:

Lockheed Martin Corporation

Prepared by:

Tetra Tech, Inc.

August 2017

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ACRONYMS

BRS	boiler-room sump
BZ	breathing zone
COC	chain of custody
CP	cover plate
DCA	dichloroethane
DCE	dichloroethene
ECD	electron-capture device
EGIS	environmental geographic information system
ELS	elevator shaft
ESH	environment, safety, and health
FD	floor drain
GC	gas chromatograph
GC/MS	gas chromatograph/mass spectrometer
HRS	heater-room sump
HVAC	heating, ventilation, and air conditioning
IA	indoor air
IAQ	indoor air quality
IDW	investigation-derived waste
LMCPI	LMC Properties, Inc.
Lockheed Martin	Lockheed Martin Corporation
µg/L	microgram(s) per liter
$\mu g/m^3$	microgram(s) per cubic meter
MDE	Maryland Department of the Environment
MRAS	MRA Systems, Inc.
MRC	Middle River Complex
PDF	portable document format
PM	project manager
ppb	part(s) per billion
QA	quality assurance
QC	quality control
SD	storm drain
SP	sump pit
SSDS	sub-slab depressurization-system

SV	sub-slab vapor
TCA	trichloroethane
TCE	trichloroethene
Tetra Tech	Tetra Tech, Inc.
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VMP	vapor monitoring point
VOC(s)	volatile organic compound(s)
VSSI	VaporSafe™ Sensor Interface

Section 1
Introduction

On behalf of Lockheed Martin Corporation (Lockheed Martin), Tetra Tech, Inc. (Tetra Tech) has prepared this report providing additional information regarding possible vapor-intrusion pathways and groundwater conditions in the Block I Building A basement at the Lockheed Martin Middle River Complex (MRC) in Middle River, Maryland (see Figure 1-1). This report describes additional air monitoring and groundwater sampling conducted to better understand the interaction of indoor air concentrations of contaminants, primarily trichloroethene (TCE), with possible infrastructure pathways and groundwater at the Middle River Complex.

Past monitoring results have detected occasional exceedances of indoor-air-quality (IAQ) screening levels in Building A basement. Therefore, an additional study is underway to assess indoor air conditions in the basement over time to better understand sub-slab-vapor conditions as they relate to the dynamics of the localized groundwater. The results of these tasks included in this report will be used to update the conceptual site model, and to understand trichloroethene exceedances in Block I Building A basement, including investigating how these vapor-intrusion exceedances might be related to the trichloroethene detected in basement sumps and in the groundwater plume adjacent to Building A.

The investigation objective was to continuously monitor air and sample groundwater in the Building A basement to determine if a correlation exists between indoor air quality and rainfall, groundwater, and/or sump elevations. Developments in the field of continuous air-monitoring have made this technology more usable in recording low concentrations of volatile contaminants over an extended period, which is advantageous over an eight-hour or 24-hour grab-sample, which only provides information for a “snapshot” in time. The automated real-time vapor-intrusion monitoring and response system ran continuously using all 16 available sampling points, providing average daily analyses at each sampling port/location. This investigation includes a two-month long, continuous-air-monitoring survey, collection of water samples from selected basement-floor

features, and a FROG 4000™ portable gas-chromatograph/mass-spectrometer (GC/MS) survey of the basement.

This investigation was conducted strategically during high precipitation months (February 24 through April 21), when the building might be most prone to vapor intrusion. During high precipitation, groundwater levels rise into the vadose[1] zone and can force sub-slab vapors up into the building. Continuous air monitoring was also scheduled during this time to coincide with the semiannual vapor-intrusion monitoring program (Round 22—February/March 2017) to correlate the results between the two sampling methods. Groundwater sampling procedures, laboratory analytical methods, and quality assurance/quality control (QA/QC) procedures used to collect, analyze, and validate data for the additional groundwater volatile organic compound (VOC) samples followed the approved *2016–2017 Groundwater and Surface Water Monitoring Work Plan* (2016–2017 work plan) of December 21, 2015 (Tetra Tech, 2015a).

This report is organized as follows:

Section 2—Site Background: Briefly describes the site history and previous investigations.

Section 3—Investigation Approach and Methodology: Presents the technical approaches for field activities and data management and describes the field methodologies employed.

Section 4—Results: Presents the field program results.

Section 5—Conclusions: Summarizes the investigation findings.

Section 6—References: Cites references used to compile this report.

[1] Above the level of groundwater.

2014 aerial photograph provided by U.S. Geological Survey.

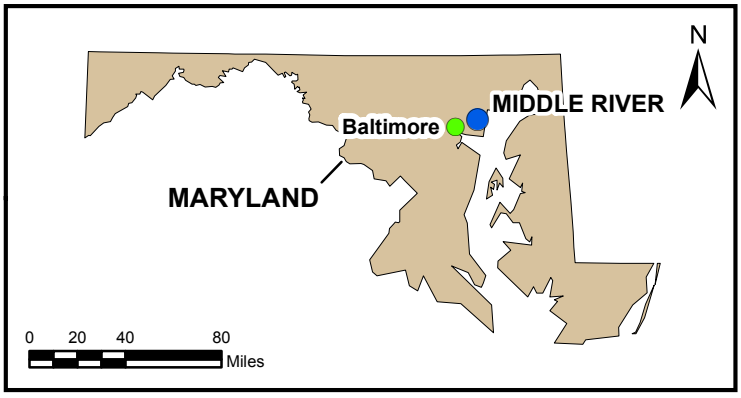


FIGURE 1-1

MIDDLE RIVER COMPLEX
LOCATION MAP

Lockheed Martin Middle River Complex
Middle River, Maryland

DATE MODIFIED:	CREATED BY:
06/22/16	JEE

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\mrc_sitemap_may2015.mxd)
06/22/16 -- JEE

Section 2
Site Background

2.1 SITE HISTORY

The Middle River Complex (MRC) land parcels owned by LMC Properties, Inc. (LMCPI) are undergoing extensive site characterization studies to support remedial decisions under the supervision of the Maryland Department of the Environment (MDE). Ongoing environmental characterization of the MRC has identified areas of subsurface soil and groundwater contamination from volatile organic compounds (VOCs) under or near some occupied workspaces (Tetra Tech, Inc. [Tetra Tech], 2006). If a complete pathway exists from the subsurface into the building, these compounds could volatilize and migrate into the workspace. Ambient (outdoor) air contributions and non-subsurface indoor sources, including emissions from process chemicals, building materials, and other sources, could also possibly affect contaminant concentrations in indoor air (IA).

2.2 PREVIOUS INVESTIGATIONS

Vapor-intrusion-related investigations from 2006–2016 confirm the presence of detectable concentrations of VOCs in both IA and sub-slab vapor (SV) at Building A.

2.2.1 Initial Investigations

Lockheed Martin Corporation (Lockheed Martin) sampled SV beneath the Building A basement (Figure 2-1) and beneath the plating shop in August 2006 (Tetra Tech, 2006). These locations were selected because VOC contamination observed in monitoring wells near the building foundation indicated a potential source of contaminated soil vapor beneath the building. Analytical results from the SV sampling, as well as other site-specific information, were used as inputs for a subsurface-vapor transport model (Johnson and Ettinger model). The model estimated that human health risks due to inhalation of indoor air were at or below MDE and United States Environmental Protection Agency (USEPA) threshold values (Tetra Tech, 2006). However, because of the

uncertainties inherent in modeling, a supplemental indoor air quality (IAQ) program was proposed to determine whether VOC contaminants were in IA, and, if so, whether they could be associated with subsurface VOC contamination at levels that exceed human-health risk limits. IAQ data for the chemicals of concern were compared to risk-based screening levels that were derived using conservative (i.e., more protective of human health and the environment) USEPA default exposure-assumptions and toxicity values. Screening-level concentrations are based on the risk levels acceptable to, and described in, MDE's Voluntary Cleanup Program guidance (i.e., an excess lifetime cancer-risk of 1×10^{-5} [or one-in-100,000], and/or a noncancer hazard quotient of 1) (MDE, 2006).

Past analyses indicate that SV migration into IA might be occurring at some locations. Trichloroethene (TCE) is the primary contaminant of concern. TCE in IA might be associated with SV migration at the Building A plating shop, based on its co-occurrence with the related marker chemical *cis*-1,2-dichloroethene (*cis*-1,2-DCE), which was found only in SV samples. The results of the first three rounds of monitoring led the project team to recommend mitigation at locations where SV concentrations were above risk-based screening levels. The project team also recommended additional IAQ and SV sampling to address areas of uncertainty identified during monitoring.

In response to these recommendations, two sub-slab depressurization-systems (SSDSs) were installed in March 2008: one beneath the Building A plating shop, and the other beneath the southern end of the Building C basement. Full system startup was on March 31, 2008. Combined semiannual IAQ and SV monitoring rounds have continued in February and August of each year since to investigate possible sources of SV, evaluate the performance of the SSDSs, and directly monitor IA to confirm ongoing protection of workers' health and safety, and to indicate any additional actions that might be necessary. Investigation results to date have led to the expansion of the SSDSs in Building A (in 2010 and 2016) and Building C (in 2012) to address areas of SV contamination beyond the influence of the original systems.

2.2.2 Recent Elevated Contaminant Concentrations in Building A Basement

Twenty-one rounds of IAQ, SV, and background monitoring have been completed at Block I Buildings A, B, and C from December 2006 through August 2016. An extensive

vapor-monitoring-point (VMP) network has been established across Buildings A, B, and C; Figure 2-2 is a building plan showing IA and SV sampling locations. Analytical results from past monitoring rounds indicate that a subset of chemicals identified in the subsurface have also been detected in background and IAQ samples. Background air samples collected outdoors around the facility exterior measure on-site chemical concentrations that might be attributable to non-MRC sources, including other industry, vehicular traffic, and other urban sources, and are used to identify possible chemical contributions from non-site operations.

Table 2-1 summarizes historical indoor-air TCE concentrations detected at four locations (093-A, 093-X, 138-A, and 018-A) in the Building A basement. TCE was detected at a concentration greater than its screening level at 093-A in the Building A basement during Round 15 (August 2013). Uncertainty regarding the TCE source (sub-slab-soil vapor, indoor air activities, or both) prompted additional investigations. Additional IA sampling was done in this area in February 2014 (Round 16) to further investigate air quality within the Building A basement (Tetra Tech, 2015b).

A portable gas-chromatograph/mass-spectrometer (GC/MS) instrument (an INFICON HAPSITE® from KD Analytical) was used in the Building A basement (Figure 2-1) during Round 16 in February 2014 to provide real-time IA concentrations of VOCs. The field-portable GC/MS is sufficiently sensitive and selective for use in vapor-intrusion applications. The portable GC/MS was specifically calibrated to measure IA TCE concentrations, and was used to locate possible internal sources and SV conduits of TCE. The survey was conducted in the southern portion of the Building A basement from the area near column D18 down to the southern wall. Twenty-eight sampling locations were surveyed, many of which were near physical features such as utility corridors, floor grates/drains, tanks, and storage cabinets.

The portable GC/MS detected TCE (16.24 parts per billion [ppb], equivalent to 87 micrograms per cubic meter [$\mu g/m^3$]) at one location in the Building A basement, directly above a floor grate at floor level near column D26. TCE was also detected in IA using conventional SUMMA canister sampling methods at two sampling locations near this grate (5.9 $\mu g/m^3$ and 1.6 $\mu g/m^3$ at sampling locations 093-A and 138-A, respectively). Historical SV exceedances of the TCE screening level have also been reported at sampling location 093-A.

This floor grate is suspected of being associated with the storm-sewer system, and might serve as a preferential pathway for soil vapor into this area of Building A (Tetra Tech, 2015b). During Round 17 (September 2014), TCE was detected in IA at concentrations greater than its screening level in the Building A basement at locations 093-A and 018-A, and in the central portion of Building A (main floor) near locations 118-A and 136-A. TCE exceedances were also detected in SV in the central portion of Building A. This prompted the installation of three portable air-filtration units in the Building A basement to mitigate TCE exceedances in indoor air. Each unit filters 300 cubic-feet of indoor air per minute. After filter installation, no exceedances were observed in the basement during Round 18 (February 2015) or Round 19 (August 2015).

A sole exceedance of TCE in IA was observed during Round 18 on the first floor of Building A at location 118-A. However, when this location was resampled two months later, the TCE concentration was less than its screening level. In contrast, SV exceedances of TCE continued to occur in the central portion of Building A (079-A, 118-A, and 136-A). During Round 19 (August 2015), no IA exceedances were noted, and the portable air-filtration units in the Building A basement appeared to be operating effectively, although SV TCE exceeded its screening level at four locations (015-A, 079-A, 118-A, and 136-A) in the central portion of Building A.

During Round 20 in February 2016, the IA concentration of TCE at location 093-A (6.4 µg/m^3) did not exceed the screening level, but IA TCE (12 µg/m^3) at a nearby basement location (138-A) did exceed the screening level. However, when sampling location 138-A was resampled one month later, the TCE concentration was less than its screening level, and remained below the screening level during the next sampling round (Round 21 in August 2016). Note that historically TCE had not exceeded its IA screening level at location 138-A.

The initial exceedance at 138-A during Round 20 indicates that SV continued to contribute TCE to IA, despite the air-filtration units in the basement. An additional investigation to determine possible sources and pathways of vapor intrusion was undertaken, because, even with the addition of the portable air-filtration units, IA concentrations of TCE continued to exceed its screening level in the basement. These additional activities were conducted in March and April 2016, in response to the February Round 20 IAQ and SV sampling in Building A, B, and C.

2.2.3 March/April 2016 Investigation of Building A and Building A Basement

Sub-slab-vapor sampling: Activities associated with the March/April 2016 field investigation include:

- Vapor Pin™ installation (easy to install sub-slab-vapor sampling ports)
- SV sampling from new vapor-monitoring locations
- visual inspection of possible vapor-intrusion conduits
- a portable-GC/MS chemical-identification-system survey for real-time TCE detection

Ten additional Vapor Pin™ VMPs were installed, including seven in the eastern wall of Building A basement (169-A, 170-A, 171-A, 172-A, 173-A, 176-A, and 177-A), two in the Building A basement floor (174-A and 175-A), and one beneath the main floor of Building A (168-A). VMPs were strategically located near possible TCE sources, including a former underground storage tank (UST) and vapor degreasers associated with former plating shop operations. SV samples from each of the 10 new Vapor Pin™ sampling locations were collected on April 1, 2016.

SV TCE results collected from the new VMP locations are displayed on Figure 2-3. Location SV-175-A on the Building A basement floor had the highest TCE concentration (460,000 µg/m^3). This concentration is more than three orders of magnitude (i.e., three powers of 10, or 1,000 times) higher than its screening level (293 µg/m^3). 1,1-Dichloroethane (DCA) (3,600 µg/m^3) also exceeded its screening level (2,567 µg/m^3) at this location (Tetra Tech, 2016a).

TCE exceedances in SV were detected in both the original and duplicate samples collected from location SV-174-A (580 and 840 µg/m^3, respectively), and in a sample collected from the Building A basement floor, near the floor grate that had exhibited elevated TCE concentrations during a previous IA survey using GC/MS. A TCE exceedance in SV also occurred at location SV-168-A (42,000 µg/m^3), on the main floor of Building A near the former location of a TCE-vapor degreaser. Chloroform (290 µg/m^3) also exceeded its screening level (177 µg/m^3) at this location. SV TCE exceedances (2,500 and 5,100 µg/m^3) also occurred at two locations (SV-171-A and SV-173-A, respectively) on the eastern wall of the Building A basement.

Portable-GC/MS survey: In response to Round 20 (February 2016) IAQ and SV sampling, Tetra Tech also visually inspected the Building A basement to assess possible vapor-intrusion pathways,

focusing on the southern end of the basement and the basement walls. Any cracks or openings in floors or walls (e.g., sumps, drains, or pipes) were noted as possible vapor-intrusion pathways and investigated. Subsequent to the visual inspection, Tetra Tech surveyed these areas (Figure 2-3) using a portable GC/MS calibrated to detect TCE. The field-portable GC/MS (FROG 4000™) was used to locate indoor VOC sources and identify sub-slab-vapor conduits, because it could identify potential sources in real-time, compared to collecting samples in individual SUMMA canisters that would then be sent to a fixed laboratory for analysis.

The FROG 4000™ field-portable GC/MS collected 42 real-time air samples from various floor and wall features in the Building A basement (Tetra Tech, 2016a). Samples were collected near breaches in the walls and floor, near openings such as utility- and heat-corridors, from selected floor features (including open pipes, sumps, and drains), and in the breathing zones in selected areas. The consistent detection of TCE in IA at these basement sampling locations appears correlated with the elevated TCE concentrations identified at the following locations:

- sub-slab sampling locations SV-174-A and SV-175-A
- sump pit near column D24
- open pipe and hole in the wall near column D29
- indoor air at the sump pit near column D26
- floor drain near column D27

Figure 2-3 illustrates TCE concentrations in samples collected using the FROG 4000™ field-portable GC/MS instrument. The highest concentrations of IA TCE (2,062 and 4,182 µg/m^3) are from duplicate samples collected at the large sump east of column D26. This sump is near the floor grate that had an elevated concentration of TCE (87 µg/m^3) during the first field-portable GC/MS-instrument survey (using an INFICON HAPSITE® instrument) in February 2014. IA TCE concentrations collected from the south-central portion of the Building A basement and immediately south of column D26 (near the floor grate) also exceeded the screening level. TCE exceedances in floor grate samples were collected from the breathing zone (53 µg/m^3), and at the floor level with the drain, both covered (27 µg/m^3) and uncovered (52 and 73 µg/m^3) (Tetra Tech, 2016a).

IA TCE exceedances were also detected at three floor features near column D24: (1) a floor drain and an open conduit for pipe runs near column D27, (2) two stub-up open pipes, and (3) a floor drain and a hole in the basement wall between columns D28 and D29. None of these exceedances were collected from the breathing zone. No TCE was detected in breathing zone samples collected between columns D25 through D29.

2.2.4 May 2016 Block I Building A Basement Supplemental Vapor-Intrusion Investigation

Tetra Tech conducted the following supplemental-investigation-related field activities in the Block I Building A basement in May 2016:

- collected and chemically analyzed six SV samples (five samples plus one duplicate) from five identified floor features
- collected and chemically analyzed nine IAQ samples (eight samples plus one duplicate), including five from the identified floor features, two from the breathing zones above two VMPs, and one at the breathing zone between the two VMPs
- collected and chemically analyzed one water sample from each of three floor features that contained infiltrated groundwater

IAQ, SV, and water sampling locations (Figure 2-4) were identified based on reviews of historical information, including previous air sampling and the two portable-GC/MS surveys conducted in the Building A basement. IAQ was sampled directly above two sumps (SP and SP2), one cover plate (CP), one floor drain (FD), and one sanitary grate (SG). SV samples were also collected from these locations. Three breathing-zone samples were collected from above two vapor-monitoring-point locations (138-A and 093-A), and from the area halfway between the two VMPs (093X-A). Three water samples were collected from the three floor features that contained infiltrated groundwater (the two sumps and the cover plate).

Existing vapor-pin locations 093-A and 093X-A exhibited TCE exceedances slightly above the IA screening level (8.8 $\mu g/m^3$). TCE exceedances were also detected in the sample and duplicate collected from the sump-pit (SP2-A) near sampling location 093-X-A; both are one order of magnitude (i.e., a power of 10) higher than the TCE screening level. TCE was detected in all other IA samples, but at concentrations less than its screening level. The TCE concentration in the sample collected from the floor grate (SG-A) is slightly below the IA screening level; this sample was also near sampling location 093X-A. All SV TCE concentrations, except for the sample collected from

the floor grate (FG), are higher than the SV screening level (293 µg/m^3). The highest concentrations were collected at sump-pit sampling locations SP2-A and SP-A; both are approximately one order of magnitude higher than the TCE screening level. Figure 2-4 shows the sampling locations and associated concentrations of TCE.

Table 2-2 summarizes TCE results for the May 2016 sampling of sub-slab vapor, indoor air, and groundwater collected by conventional methods, along with the real-time results from the FROG 4000™ portable GC/MS instrument. TCE exceedances at least three orders of magnitude (i.e., three powers of 10, or 1,000 times) higher than the maximum contaminant level (five micrograms per cubic meter [µg/m^3]) were detected at all three water-sampling locations (SP-A, SP2-A, and CP-A). Note, however, that the maximum contaminant level is a drinking water standard, and thus not directly applicable to water sampled from sumps. Significantly elevated IA concentrations of TCE were detected in samples collected near sump-pit location SP2-A; these concentrations correlate with TCE concentrations in corresponding water and soil-vapor samples. TCE was detected in all five IA samples collected by the conventional method. These data suggest that groundwater in the sump pits and beneath the cover plate is infiltrating from outside, and possibly from beneath, Building A, and is a continuing source of TCE to soil vapor and indoor air in the Building A basement (Tetra Tech, 2016b).

Table 2-1
Historical Indoor-Air Concentrations of Trichloroethene in Building A Basement
Lockheed Martin Middle River Complex, Middle River, Maryland

Round	Location 093-A	Location 093-X	Location 138-A	Location 018-A
Round 15 August 2013	**13**	—	2.9	—
Round 16 February 2014	5.9	8.4	1.6	—
Resample August 21, 2014[(1)] (093-A and 018-A only)	**10.6**	—	—	**10.9**
Resample August 27, 2014[(1)] (093-A and 018-A only)	**9.9**	—	—	**26.2**
Round 17 September 2014	**9.2**	—	5.5	—
Resample October 2, 2014	**12.2**	—	—	—
Resample November 12, 2014	**12.1**	—	—	—
Round 18 February 2015[(3)]	1.5	8.3	1.6	—
Round 19 August 2015	3.3	—	0.87*J*[(2)]	—
Round 20 February 2016	6.4	—	**12**	—
Resample March 11, 2016	—	—	2.4	—
Round 21 August 2016	6.0	—	2.7	2.3

•All concentrations are in units of microgram(s) per cubic meter of air (µg/m^3).

•Items in **bold** indicate that the concentration exceeds the indoor-air screening level for trichloroethene (8.8 µg/m^3).

[(1)]A leaking fire-control water pipe under the floor of the Building A plating shop flooded the Building A basement, which triggered a shutdown of the sub-slab depressurization-system. Therefore, supplemental indoor-air-only sampling was performed at locations in Building A on August 21, 2014, and August 27, 2014, to evaluate whether the system shutdown had possibly allowed volatile organic compounds to migrate into indoor air.

[(2)]*J*: The analyte is considered present in the sample. However, the value is estimated and may not be accurate or precise. In this program, samples were qualified with "*J*" because quantitation was above the method detection-limit but below the laboratory-reporting limit.

[(3)]Results from this date onward were collected after the three air-filtration units were installed in the Building A basement.

Table 2-2
Trichloroethene Concentrations (All Media) near Floor Features
in Building A Basement, March and May 2016
Lockheed Martin Middle River Complex
Middle River, Maryland

Sampling location	Sampling location ID	Water (µg/L)	Soil vapor (µg/m^3)	Indoor air (µg/m^3)	FROG 4000™ (µg/m^3)
Cover plate	CP-A	**120**	**340**	1.1	**495**
Sump pit	SP-A	**2700**	**1400**	0.9	**918 and 706**
Sump pit 2	SP2-A	**420**	**1400**	**82**	**2062 and 4182**
Sump pit 2 (duplicate)	SP2-A	n/a	**2000**	**70**	—
Floor drain	FD-A	n/a	**1200**	1.5	40
Sanitary grate	SG-A	n/a	31	7.7	53 (breathing zone) 52 and 73 (open) 27 (covered)

- **Bold** font indicates an exceedance of the medium-specific screening level for trichloroethene (8.8 µg/m^3 for indoor air, 293 µg/m^3 for soil vapor, and the maximum contaminant level of 5 µg/L for water).
- µg/m^3—microgram(s) per cubic meter air
- µg/L—microgram(s) per liter
- n/a—not analyzed

LEGEND

- STRUCTURE
- BASEMENT LEVEL

FIGURE 2-1

SITE LOCATION MAP
BUILDING A AND BUILDING A BASEMENT

Lockheed Martin Middle River Complex
Middle River, Maryland

DATE MODIFIED: 11/09/15

CREATED BY: JEE

0 75 150 Feet

N

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\bldg_a_site_layout.mxd)
11/09/15 -- JEE

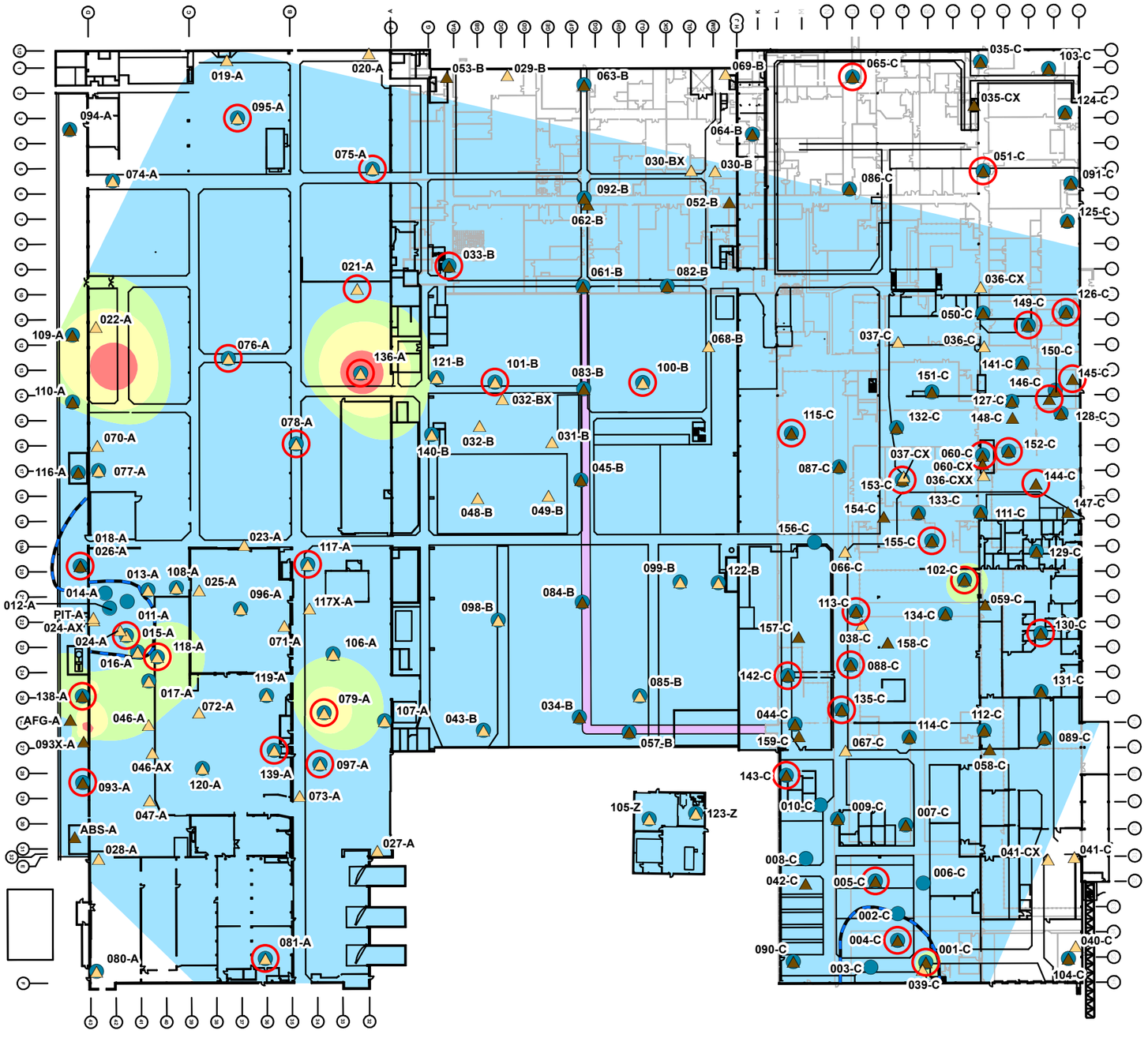


FIGURE 2-2

2016 AND 2017 INDOOR AIR AND SUB-SLAB VAPOR SAMPLING LOCATIONS FOR BUILDINGS A, B, AND C

LEGEND

- Proposed Rounds 20-23 Sampling Locations
- IAQ, 1st Floor
- IAQ, Basement
- SV
- Buildings A, B and C
- Building B and C Basement
- SSD Radius of Influence
- SSD Treatment Unit
- Tunnel

IAQ - indoor air quality
SV - sub-slab vapor
SSD - sub-slab depressurization
TCE - trichloroethene
ug/m3 - micrograms per cubic meter
N - north
X - moved from original location once
XX - moved from original location twice

February 2016 Sub-Slab Vapor TCE Concentration

- 10000 ug/m3
- 1000 ug/m3
- 293 ug/m3
- 0.1 ug/m3

Lockheed Martin Middle River Complex
Middle River, Maryland

0 60 120 Feet

N

DATE MODIFIED: 08/01/16

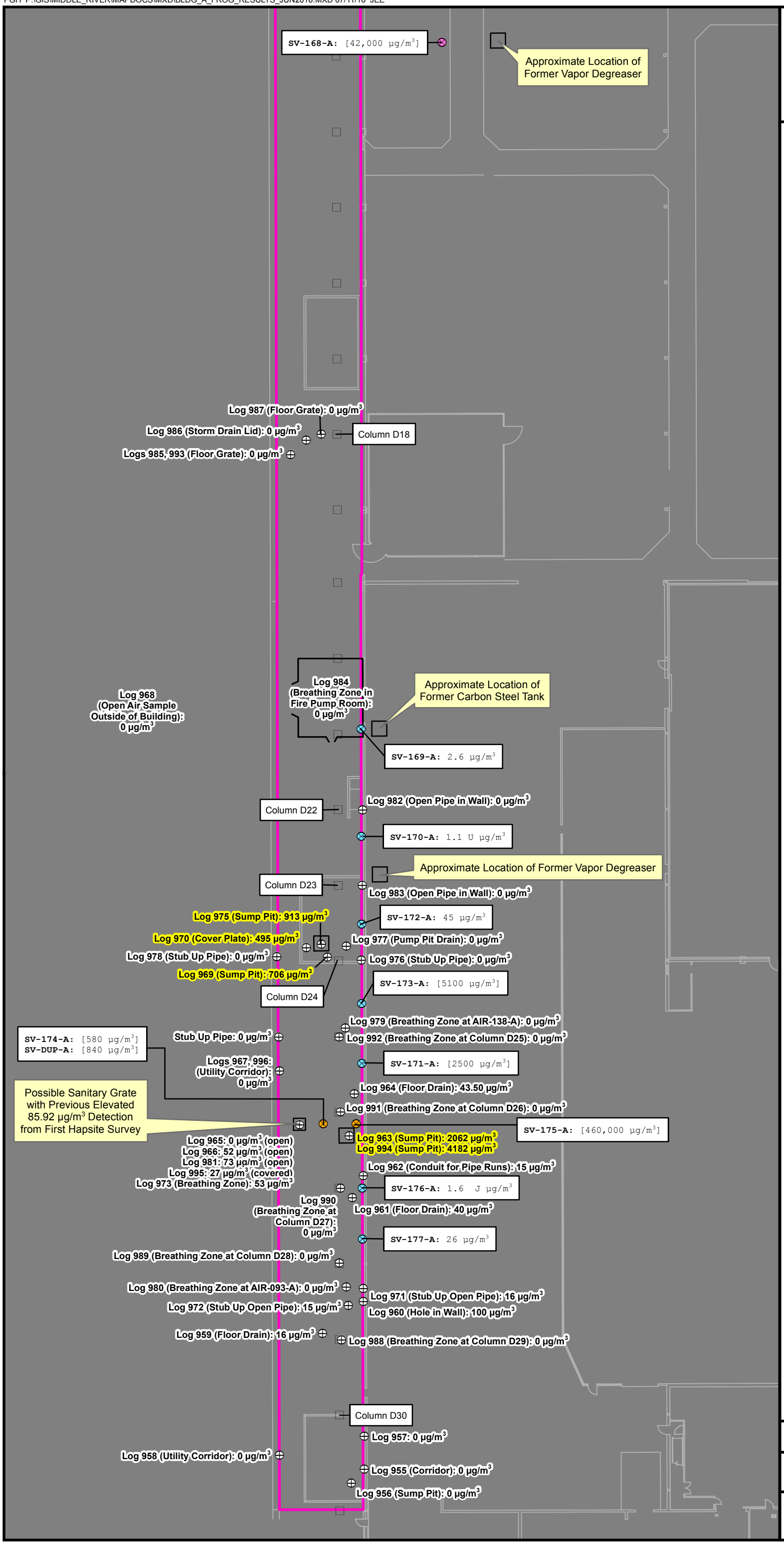
CREATED BY: JEE

TETRA TECH

Map Document: (P:\GIS\Middle_River\MapDocs\MXD\bldg_abc_tce_planned_rnds20_23.mxd)
08/01/16 -- JEE

FIGURE 2-3

TCE RESULTS DETECTED DURING SUB-SLAB SAMPLING AND PORTABLE GC/MS SURVEY, BUILDING A AND BUILDING A BASEMENT



Legend

[580]	TCE Sampling Results (values higher than screening values shown with brackets)
⊗	VMPs on Building A Main Floor
⊗	VMPs through Building A Basement Wall
⊗	VMPs through Building A Basement Floor
⊕	Frog 4000™ Sample Location
▭	Bulding A Basement
□	Basement Support Column
—	Ground Floor Layout

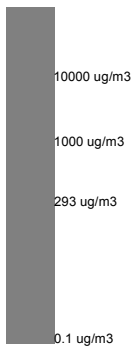
IA	Indoor Air
SV	Soil Vapor
TCE	trichloroethene
µg/m³	micrograms per cubic meter
VMP	vapor monitoring point
J	estimated value

Samples highlighted in **yellow** indicate highest Frog 4000™ TCE detections.

TCE Screening Levels

IA	8.8 µg/m³
SV	290 µg/m³

February 2016 Sub-Slab Vapor TCE Concentration



N

0 16 32 Feet

Lockheed Martin Middle River Complex
Middle River, Maryland

DATE MODIFIED:	CREATED BY:
07/11/16	JEE

TETRA TECH

PGH P:\GIS\MIDDLE_RIVER\MAPDOCS\MXD\BLDG_A_FLOOR_RESULTS_JUN2016.MXD 05/10/17 KM

FIGURE 2-4

TCE INDOOR AIR, SUB-SLAB VAPOR AND WATER SAMPLING RESULTS, MAY 2016 BUILDING A BASEMENT

Legend

- [580] TCE Sampling Results (values higher than screening values shown with brackets)
- Sub-Slab and Indoor Air Co-located Sample Location
- Breathing Zone Indoor Air Sampling Location
- Sub-Slab Water Sampling Location
- Location Sampled in Previous Rounds
- Bulding A Basement
- Ground Floor Layout

IA	Indoor Air
SV	Soil Vapor
GW	Groundwater
WS	Water Sample
TCE	trichloroethene
µg/m³	micrograms per cubic meter
µg/L	micrograms per liter
J	estimated value

Highlighted results exceed screening levels.

TCE Screening Levels

IA	8.8 µg/m³
SV	290 µg/m³
GW	22 µg/L

February 2016 Sub-Slab Vapor TCE Concentration

- 10000 ug/m3
- 1000 ug/m3
- 293 ug/m3
- 0.1 ug/m3

Approximate Location of Former Vapor Degreaser

Fire Suppression Room

Approximate Location of Former Carbon Steel Tank

Approximate Location of Former Vapor Degreaser

Approximate Location of Floor Grate

SV-SG-A: 31 µg/m³
IA-SG-A: 7.7 µg/m³

AIR-138-A
IA-138-A: 1.6 µg/m³

AIR-093X-A
IA-093X-A: [15 µg/m³]

AIR-093-A
IA-093-A: [15 µg/m³]

SV-CP-A: 340 µg/m³
IA-CP-A: 1.1 µg/m³

WS-CP-A: 120 µg/L

Cover Plate

Sump Pit

SV-SP-A: 1400 µg/m³
IA-SP-A: 0.9 J µg/m³

WS-SP-A: 2700 µg/L

Floor Drain

SV-FD-A: 1200 µg/m³
IA-FD-A: 1.5 µg/m³

Sump Pit

SV-SP2-A: 1400 µg/m³
SV-DUP-A: 2000 µg/m³
IA-SP2-A: 82 µg/m³
IA-DUP-A: 70 µg/m³

WS-SP2-A: 420 µg/L

N

0 25 50 Feet

Lockheed Martin Middle River Complex
Middle River, Maryland

DATE MODIFIED:	CREATED BY:
05/10/17	JEE

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Section 3
Investigation Approach and Methodology

This report documents the field activities conducted to provide additional information regarding possible vapor-intrusion pathways and groundwater conditions in the Block I Building A basement at the Lockheed Martin Corporation (Lockheed Martin) Middle River Complex (MRC) in Middle River, Maryland. Additional air monitoring and groundwater sampling were conducted to better understand the interactions of indoor air (IA) concentrations of contaminants, primarily trichloroethene (TCE), with potential infrastructure pathways and groundwater at the MRC. Investigation activities conducted as part of this investigation include the following:

- continuously monitoring IA concentrations in the Building A basement for two months at 15 sampling locations, targeting floor features that have historically exhibited elevated TCE levels (in portable gas-chromatograph/mass-spectrometer [GC/MS] samples and SUMMA canister sampling) and areas with breathing-zone samples in the critical area of the basement (extending from column D22 to column D28) that have exhibited the highest TCE levels. A background breathing-zone location was also added at column D20.

- conducting weekly site visits over the duration of continuous air-monitoring to note significant changes (e.g., groundwater infiltration into the basement or any other impacts) that could influence vapor intrusion; measuring periodic water levels from sumps in the basement and monitoring wells near Building A basement; and periodically monitoring the continuous-sampling system, troubleshooting as required

- collecting groundwater samples for volatile organic compound (VOC) analysis from selected floor features (i.e., sumps, storm drains, and a lift station)

- conducting a FROG 4000™ portable gas-chromatograph/mass-spectrometer (GC/MS) survey in the Building A basement to identify any additional floor features that might contribute to elevated TCE in indoor air

Before beginning work, Tetra Tech, Inc. (Tetra Tech) notified and coordinated access arrangements through Lockheed Martin Security, EMCOR (the site maintenance contractor), and MRA Systems Inc. (Middle River Aircraft Systems [MRAS]) to gain access to the Building A basement. MRC

tenants were informed and updated about the vapor-intrusion investigation at the LMC Properties, Inc. (LMCPI) biweekly meetings. LMCPI was also notified of the tasks and schedule. Site access and notifications/approvals conformed to the provisions of the Lockheed Martin Corporation (Lockheed Martin) *Remediation Contractor's Environment, Safety and Health (ESH) Handbook, Revision 4, January 12, 2016* (Lockheed Martin, 2016).

The work did not involve any intrusive activities, so no permits or utility clearance were required. Tetra Tech complied with all federal, state, and local laws, regulations, and ordinances relating to this work. No site operations were affected, because the work was done in the Building A basement, where no permanent site workers are present.

3.1 CONTINUOUS AIR MONITORING

Tetra Tech secured the services of Blayne Hartman (Hartman Environmental Geoscience) and Mark Kram/Cliff Frescura (Groundswell Earth Monitoring Software) to mobilize the automated continuous real-time vapor-intrusion monitoring and response system (VaporSafe™ System, SRI Instruments Model 8610 gas-chromatograph [GC] with electron-capture detector [ECD]), provide instructions for basic periodic monitoring of the system equipment, provide a Web-based dashboard to view results, and develop a report detailing TCE monitoring data over the two month duration (February 24, 2017 to April 21, 2017). Table 3-1 shows the project timeline.

Tetra Tech oversaw the GC/ECD setup in the Building A basement. The arrangement consisted of extending ⅛-inch (shorter runs) or ¼-inch (longer runs) open-ended tubing from sampling ports in the GC to 15 sampling locations in the basement. Ten locations were situated at ground level and five were within the breathing zone. Figure 3-1 presents the continuous-air-monitoring and groundwater-sampling locations in the Building A basement. Table 3-2 lists the 15 continuous-air-monitoring locations.

The tubing was secured with zip ties and run along the ceiling of the basement where possible, to avoid impeding worker operations in the basement. Monitoring locations were selected to target previous indoor-air sampling locations; selected floor features, such as sumps, drains, and breaches in the floor and basement wall that are considered possible source areas for vapor intrusion; and breathing-zone locations in the basement area adjacent to the old plating operations on the main

floor of Building A (extending from column D20 to column D28). A photographic log of selected floor features and the continuous-air-monitoring unit is in Appendix A.

The GC/ECD was configured to analyze for TCE in air samples approximately every 10 minutes over a two-month sampling duration. In this configuration, the instrument could collect TCE data approximately 144 times per day (1440 minutes per day divided by 10 minutes per analysis/run time). This provided (on average) nine to 10 analyses per day from each of 16 sampling locations (14 sampling locations, one background sampling location, and one calibration standard). The GC/ECD instrument was calibrated for TCE, and strictly sampled for TCE in indoor air using United States Environmental Protection Agency (USEPA) Method TO-14. The instrument was set up for an analytical reporting level (RL) of two micrograms TCE per cubic meter of air ($\mu g/m^3$). Ultra-high pure nitrogen-gas cylinders supplied carrier gas to operate the unit.

Tetra Tech monitored system performance over the two-month sampling duration and performed periodic troubleshooting as needed. Troubleshooting included: (a) replacing the air pump that had stopped working due to moisture being pulled into the system from one of the port tubes; (b) reconfiguring the port order on the continuous-air-monitor following a few days of run time, and based on detected TCE concentrations; (c) taking certain ports offline temporarily to investigate higher levels of TCE detected in the calibration gas; (d) replacing the calibration-gas-cylinder tubing with stainless steel tubing, due to elevated TCE calibration-gas readings; and (e) shutting down and restarting the system in association with scheduled power outages (April 7–9, 2017) and substation maintenance at the MRC. The instrument was in-sync with the Groundswell software that monitored TCE concentrations in real time (via a continuous live Internet connection established in the basement either via an Ethernet cable or telephone modem).

3.1.1 Building Observations

Tetra Tech documented supporting building information during the two-month monitoring period. This information includes observations of groundwater on the basement floor, the presence and measured elevations of groundwater in the sumps, any pertinent changes related to the heating, ventilation, and air conditioning (HVAC) system in the building, and any other observed conditions that could influence vapor intrusion in the basement. A summary of the building observations is below:

- Water was often standing in the far southern end of the basement around heating-room sump HRS7, especially during significant rainfall. Most of the water was seeping from behind basement walls; a minor contribution resulted from rainwater falling down an open ladder hatch along the southern wall.

- Water was often standing in the underground utility corridor in the southern end of the basement that connects the Building A basement with the Drop Hammer building. This water was from seepage, plus water described above that flows across the basement floor, down the steps, and into the corridor.

- Three air-purifying units were operating at the following locations: adjacent to column D29; in front of heater-room sump HRS5 near column D26; and five feet southwest of column D25.

- Water levels in the heater-room sumps varied, and were likely due to varied groundwater infiltration, sump-pump height-settings, and the condition of the sumps (operating or broken).

- Water in heater-room sump HRS6 was consistently within one foot of the floor surface. This may have been due to a broken sump pump; however, even during and after heavy rainfall, the water level in the sump did not significantly change.

- The only sump pump in the critical area of the basement (between columns D20 and the southern wall) that operated continually was the pump in heater room A-6 (HRS4). This pump turned on often, due to a connection from the adjacent fire-pump room that provides continual water flow to keep the valves lubricated. No other sump-pump operation was evident during the two-month survey in the southern portion of the basement.

- Various hatch windows at the top of the western wall of the basement leading to the outside were either open or have breaches.

- Some water was noticed in the bottom of the small floor-drain (FD2) adjacent to column D26.

- Heater fans were operating throughout the basement, including: near column D17 five feet from the eastern basement wall; adjacent to column D25; and between columns D18 and D19 against the eastern wall.

- No differences in HVAC were noticed in the basement throughout the two-month survey, including over the weekends. (This was confirmed with EMCOR.)

3.1.2 Meteorological Data

Weather data from the Martin State Airport weather station were monitored during the two-month continuous-air-monitoring survey. Table 3-3 summarizes precipitation (i.e., rain, snow) received during the survey. Between February 25, 2017 and April 22, 2017, measurable precipitation was

recorded on nine days, ranging from 0.02 inches to 0.67 inches, with the highest precipitation recorded on March 14, 2017 during a rain and snow storm.

3.1.3 Pressure Units

A barometric-pressure unit and a differential-pressure unit provided additional data during the continuous-air-monitoring survey.

***Barometric-pressure unit*—**On March 7, 2017, a barometric-pressure sensor and telemetry unit were installed on the Building A loading dock to measure and report barometric air-pressure and transmit data to the Groundswell Technologies sensor portal throughout the investigation. Additional parameters, such as internal temperature, supply voltage, and uptime, were also reported. The unit transmitted data every 10 minutes via the on-site modem, and was powered by 120 volts of alternating current.

***Differential-pressure unit*—**On March 27, 2017, a differential-pressure unit was installed in the Building A basement to measure the difference between sub-slab and indoor-air pressure. This unit was installed to correlate indoor air concentrations of TCE with sub-foundation pressure. The unit was located within the Building A basement near heater-room sump HRS5, and was connected to sub-slab Vapor Pin™ SV-174-A via tubing. A cable was run from the back of the unit to the work area near column D24 that housed the continuous air-monitor, and was attached to the laptop by a USB connection.

After connecting the unit on March 27, 2017, field personnel determined that the current laptop configuration would not support the connection of an additional monitoring device. Mr. Cliff Frescura addressed this by creating a new program—*VSSI*: VaporSafe™ Sensor Interface—exclusively for the sensor data, while updating the *VIRTU* software on the laptop. After creating the new program and updating the software, the differential-pressure unit became operational on April 2, 2017. Differential-pressure data were then collected and uploaded every five minutes.

3.1.4 Covering Floor Features

A test was conducted during the two-month survey to see what effect covering selected floor features that had exhibited the highest TCE concentrations would have on indoor air concentrations. On March 20, 2017, Tetra Tech covered the following locations: SD1 (storm-drain

lid); SP1 (sump); FD1 and FD2 (floor drains); and HRS5 (heater-room sump). These floor features were covered with 6-mil plastic sheeting (doubled over to provide 12-mil coverage) and weighted down using a combination of metal pipes and sand/gravel bags. Before covering each floor feature, the tubing for the continuous-air-monitor port was removed and relocated to a breathing-zone height above each feature, to provide additional breathing-zone monitoring locations while the floor features were covered. On March 30, 2017, 10 days after the first set of floor features had been covered, an additional three features were covered with plastic, including FD3 (floor drain); HRS7 (heater-room sump); and the large opening in the eastern wall of the basement associated with HRS5 (heater-room sump).

3.2 WATER MONITORING AND SAMPLING

3.2.1 Water-Level Monitoring

Water levels were measured periodically in monitoring wells (MW17A, MW18A, MW64A, MW90B, MW96A, MW96B, and MW109B) adjacent to Building A and from basement floor features during the two-month continuous-air-monitoring survey. The following tables present water-level data (in feet from top of casing) from groundwater wells adjacent to the Building A/Building A basement (Table 3-4), and from sumps and a storm drain in the Building A basement (Table 3-5). Overall, water levels in both the groundwater wells and the floor features in the basement remained fairly consistent, without significant change over the two-month continuous-air-monitoring period.

3.2.2 Collection of Water Samples

On March 2–3, 2017, Tetra Tech collected 15 water samples from selected floor features in the Building A basement. These water samples were submitted for laboratory analysis for VOCs using USEPA Method 8260C. All samples were submitted to the laboratory (TestAmerica of North Canton, Ohio) with the appropriate certification, and all appropriate chain of custody (COC) documentation was completed for each water sample.

Samples from the floor features include 10 sump samples, three storm-drain samples, one lift-station sample, and one elevator-shaft sample. Many of these floor features (sumps) were targeted because they had exhibited elevated TCE concentrations during previous portable GC/MS surveys;

others (storm drains, lift station, and elevator shaft) were sampled because they had not been previously sampled.

Water samples were collected as grab samples by lowering an unpreserved, plastic, laboratory-cleaned bottle and/or disposable dipstick device down into the floor feature and retrieving the available standing water, or by a peristaltic pump, depending upon the volume of water available and access to each floor feature. Water was immediately decanted from the collection bottle into 40-milliliter vials preserved with hydrochloric acid. Precautions were taken to minimize aeration and agitation of the sample while decanting (decanting slowly without causing air bubbles). Water samples were immediately placed on ice in a cooler and prepared for shipment to the laboratory.

Field-sample log sheets for water samples collected in the field are in Appendix B. Figure 3-1 shows water sampling locations in the Building A basement. Table 3-6 lists sampling locations and rationales for the 15 water samples collected in the Building A basement. Groundwater sampling procedures, laboratory analytical methods, and quality assurance/quality control (QA/QC) procedures used to collect, analyze, and validate data for the additional groundwater VOC samples followed the approved *2016–2017 Groundwater and Surface Water Monitoring Work Plan* (2016-2017 work plan) of December 21, 2015 (Tetra Tech, 2015a).

3.3 FROG 4000™ SURVEY

Tetra Tech used a commercially available portable gas-chromatograph/mass-spectrometer (GC/MS) machine (FROG 4000™) to provide an alternative means of real-time analysis of VOCs in indoor air. The FROG 4000™ field-portable GC/MS is a commercial field instrument that is sufficiently sensitive and selective for use in vapor-intrusion applications. On April 7, 2017, Tetra Tech conducted a survey using the FROG 4000™ GC/MS to measure TCE concentrations in indoor air and locate possible internal sources and pathways of TCE in the Building A basement. The analysis was limited to TCE; the instrument was calibrated to identify an ion specifically characteristic of TCE, thus removing any interference from other VOCs. Each sample required approximately 10 minutes to collect.

The survey included the southern portion of the Building A basement, once selected floor features showing elevated TCE concentrations had been covered. This survey was an attempt to identify

any other features in the basement (i.e., drains, sumps, utility corridors, breaches in the walls and floor, pipe conduits) that might contribute to elevated TCE in IA. Twenty-seven basement locations were surveyed.

They indicate that low levels of TCE were being released from the covered conduits through small breaches in the plastic. The highest TCE detections (> 350 parts per billion [ppb]) during the FROG 4000™ survey were from behind the plastic covering the wall opening associated with heater-room sump HRS5, and from within the plastic that was wrapped around the sump-pump pipe coming out of heater-room sump HRS5. Other minor concentrations of TCE (< 7 ppb) were detected in other basement features, including pipe chases, floor drains, and stub-up pipes. A TCE concentration of 10 ppb was detected in the breathing-zone sample collected at column D26 (BZD26).

3.4 WASTE MANAGEMENT

Investigation-derived waste (IDW) generated during the continuous-air-monitor survey and water sampling consisted of personal protective equipment (PPE) and sampling containers (unpreserved plastic bottles used to collect water samples). The PPE and sample container IDW was placed in trash bags and disposed of in a facility trash receptacle designated by Lockheed Martin personnel.

3.5 DATA MANAGEMENT

Laboratory data-handling procedures meet the requirements set forth in the laboratory subcontract. All analytical and field data are maintained in the project files. The project files contain copies of the chain of custody (COC) forms, sampling log forms, sampling location maps, and data quality-assurance documentation.

3.5.1 Data Tracking and Control

A “cradle to grave” sample-tracking system was used from the beginning to the end of sampling. The field operations leader coordinated sample tracking before the team mobilized to the field. Sample labels were handwritten in the field or preprinted. Labels were reviewed to ensure their accuracy and adherence to work plan requirements. The project manager’s (PM) assistant coordinated with the analytical laboratory to ensure that they were aware of the number and type of samples and analyses to expect.

The field operations leader forwarded the COC forms to the PM's assistant and to the laboratory each day that samples were collected. The PM's assistant confirmed that the COC form provided the information required by the work plan. This allowed early detection of field errors so that adjustments could be made while the field team was still mobilized. The laboratory submitted an electronic deliverable for the sample delivery groups. When all electronic deliverables had been received from the laboratory, the PM's assistant confirmed that the laboratory had performed all analyses requested.

3.5.2 Sampling Information

Data from field measurements were recorded using the appropriate log sheets, as per Tetra Tech standard operating procedures. Reduction of field data entailed summarizing and presenting these data in tabular form. Reduction of laboratory data entailed manipulation of raw data-instrument output into reportable results. Laboratory data were verified by the group supervisor and by the laboratory's quality control/documentation department.

3.5.3 Project Data Compilation

The analytical laboratory generated an Adobe *Acrobat*® portable document format (PDF) file of the analytical data packages, as well as an electronic database deliverable. The electronic database was checked against the PDF file provided by the laboratory and updated as required, based on data-qualifier flags applied during data validation. Data generated during implementation of the sampling and analysis plan were incorporated into the MRC environmental geographical information system (EGIS) database. All data (such as units of measure and chemical nomenclature) were checked to maintain consistency with the project database.

3.5.4 Geographical Information System

The data management system for this effort consists of a relational database and EGIS to manage environmental information pertaining to the MRC. The relational database stores chemical, geological, hydrogeological, and other environmental data collected for MRC environmental investigations. The EGIS is built from the relational database and contains subsets of the larger data pool. Using the EGIS, environmental data were posted onto base maps to represent the information graphically for this report.

3.6 DATA REVIEW

Data from the laboratory were entered into a database of samples and evaluated against risk-based criteria. Data validation (evaluating data completeness, holding times, calibrations, precision, accuracy, laboratory- and field-blank contamination, and detection limits) was done by the Tetra Tech chemical-data-validation group in Pittsburgh, Pennsylvania, concurrent with the data evaluation. These reviews are based on national functional guidelines for inorganic and organic Superfund methods data review (USEPA, 2017a and 2017b, respectively), and the specifics of the analytical methods used.

Water sampling data consist of the samples' chemical analytical results. Data-validation reports and COC are in Appendix C as PDF files (on compact disc). The data were validated as acceptable for their intended uses (i.e., risk screening and risk assessment). The following data qualifiers (i.e., flags) were applied to the chemical results presented in this report:

J The analyte is considered present in the sample. However, the value is estimated and may not be accurate or precise. In this program, samples were qualified with "*J*" because quantitation was above the method detection limit but below the laboratory-reporting limit.

NJ The instrument was not calibrated for these tentatively identified compounds, therefore, the detected compounds were qualified as estimated and assumed to be presumptively present.

U The analyte is not detected at the detection limit left of the letter.

UJ The analyte is not detected; however, the quantitation or detection limit may be inaccurate or imprecise.

The data qualifiers above appear in the chemical results tables and figures in Section 4 and in Appendix D.

Table 3-1

Continuous Air Monitoring Project Timeline
Building A Basement
Lockheed Martin Middle River Complex, Middle River, Maryland

Date	Continuous Air Monitor Downtime	Building A SSDS shutdown	Tasks Completed
15-Feb-17			Supply purchase/project call
16-Feb-17			Project setup/ran and secured 15 tubes in basement to sample locations
17-Feb-17			Project setup/ran and secured 15 tubes in basement to sample locations, nitrogen tank delivery and setup
20-Feb-17			Blayne Hartman arrives in Baltimore, final securing of all tubing, setup table in prep for start on Tuesday
21-Feb-17			Continuous Air Monitor initial setup, calibration
22-Feb-17			Continuous Air Monitor initial setup, calibration-begin running unit
23-Feb-17	1:10pm shut down		Troubleshooted pump, bad chromatograms indicated issue with Port 14 (FD2-floor drain) and/or Port 15 (HRS5-heater room sump)-pump stopped working due to moisture
24-Feb-17	11:20am restart unit		Received new pump and picked up at Fedex, took old pump offline, wired new pump to unit, restarted unit with new pump, ran to lab to get bottleware for sump water samples
27-Feb-17	1:00pm shut down and 2:00pm restart		Pulled SUP (stub up pipe-Port 1) offline to use as blank, reconfigured all tubing/ports based on where we were getting high concentrations so breathing zone ports were not right after sump/drain ports where we were seeing elevated TCE
28-Feb-17		Shut down Building A SSDS at approximately 8:00am	Building A SSDS shutdown due to semiannual MRC SV/IAQ sampling
1-Mar-17		Restart Building A SSDS at approximately 5:00pm	Restarted Building A SSDS following completion of SV/IAQ sampling
2-Mar-17			Collected 15 sump samples in basement, round of water levels
3-Mar-17			Collected 15 sump samples in basement
6-Mar-17			Troubleshooted elevated TCE in calibration gas issue, receive barometric pressure unit from Cliff Frescura, collected water levels
7-Mar-17		Shut down Building A SSDS 2:45pm for VMP sampling	Removed connection to Port 14 (SP1-sump) troubleshoot TCE cal gas issue by taking offline ports with elevated TCE to see affect on data/system, install baromteric pressure unit on Building A Dock, start barometric pressure unit
8-Mar-17		Restart at approximately 1130am	Reattached Port 14 (SP1-sump)-troubleshoot TCE cal gas issue
9-Mar-17			Disconnected Port 12 (HRS5-heater room sump)-troubleshooted TCE cal gas issue, sump water levels in critical area of basement
10-Mar-17			Reconnected Port 12 (HRS5-heater room sump)-troubleshooted TCE cal gas issue, water levels in nearby wells
13-Mar-17			Replaced the tubing from the calibration gas tank to the continuous air monitor unit with a new stainless steel tube. Connected a tube to the vent coming off the flow meter/pump to vent any exhaust from the pump out a hatch window in the basement to make sure no TCE is being vented into the basement when the unti runs the samples with elevated TCE.
20-Mar-17			Covered locations SD1, HRS5, FD1, FD2, SP1. Locations then became breathing zone (BZD) locations
27-Mar-17			Installed differential pressure unit
30-Mar-17			Covered additional locations including floor drain FD-3, heater room sump HRS7 and void space in wall behind heater room sump HRS5
2-Apr-17			Began operation of the differential pressure unit
7-Apr-17	Shutdown late afternoon	Shutdown afternoon	Continuous monitoring, differential pressure, and BP shutdown late Friday afternoon, April 7th due to pending poweroutage related to substation maintenance.
9-Apr-17	Restart 15:45	Restart 13:15	Continuous air monitoring, differential pressure restarted 13:25, BP restarted 13:20
7-Apr-17			Frog 4000™ survey conducted to determine if there were any other conduits releasing TCE to indoor air. Confirmed that TCE is being released at low levels from covered conduits escaping through small breaches in plastic.
13-Apr-17			Removed covers from conduits
21-Apr-17			Discontinued system

BZD - breathing zone
BP - barometric pressure
IAQ - indoor air quality
MRC - Middle River Complex
SSDS- sub-slab depressurization system
SV - soil vapor
TCE - trichloroethene
VMP - vapor monitoring point

TABLE 3-2

CONTINUOUS AIR MONITORING SAMPLE LOCATIONS, BUILDING A BASEMENT
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Sample ID	Sample Location and Rationale
Continuous Air Monitoring Location	
IA-CM-SD1-A	Storm drain near Column D26-assess indoor air conditions above storm drain at historical sample location "SG" with portable GC/MS air concentrations below slab of 73 µg/m^3 TCE (Frog 4000™); 85.92 µg/m^3 TCE (Hapsite ER) and 31µg/m^3 TCE in summa canister sample ; indoor air concentrations of 53 µg/m^3 TCE during Frog 4000™ portable GC/MS air survey (breathing zone); 27 µg/m^3 TCE just above the covered lid and 7.7 µg/m^3 TCE in summa canister sample.
IA-CM-HRS5-A	Sump pit in Heater Room #5-to assess indoor air conditions above sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement-at historical sample "SP2" with portable GC/MS air readings below slab up to 4,182 µg/m^3 TCE (Frog 4000™) and 1,400 µg/m^3 TCE in summa canister sample; indoor air concentrations of 82 µg/m^3 TCE in summa canister sample.
IA-CM-HRS6-A	Sump pit in Heater Room #6 to assess conditions above sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.
IA-CM-HRS7-A	Sump pit in Heater Room #7 to assess conditions above sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.
IA-CM-SP1-A	Sump pit just north of Column D24 formerly identified as "CP" to assess conditions above sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement-with portable GC/MS (Frog 4000™) air concentrations below slab of 913 µg/m^3 TCE; 1,400 µg/m^3 in summa canister sample; and indoor air concentration of 0.9J µg/m^3 TCE in summa canister.
IA-CM-HIW-A	Hole in eastern wall of basement between Columns D28 and D29-assess indoor air conditions outside hole that exhibited 100µg/m^3 TCE during Frog 4000™ portable GC/MS air survey. Potential source of TCE behind basement wall from the historical presence of tanks and vapor degreasers used on the Building A main floor.
IA-CM-SUP-A	Stub up pipe located against eastern wall of basement between Columns D28 and D29-assess indoor air concentrations above pipe that exhibited 16 µg/m^3 TCE during Frog 4000™ portable GC/MS air survey.
IA-CM-FD1-A	Floor drain near Column D24-assess indoor air concentrations that exhibited below slab concentration of 706 µg/m^3 TCE during Frog 4000™ portable GC/MS air survey and 1,200 µg/m^3 in summa canister sample; indoor air concentration of 1.5 µg/m^3 TCE in summa canister sample. Potential conduit for vapor intrusion of TCE below floor of basement.
IA-CM-FD2-A	Floor drain near Column D26-assess indoor air concentrations that exhibited below slab concentration of 43.5 µg/m^3 TCE during Frog 4000™ portable GC/MS air survey. Potential conduit for vapor intrusion of TCE below floor of basement.
IA-CM-FD3-A	Floor drain near Column D27-assess indoor air concentrations that exhibited below slab concentration of 40 µg/m^3 TCE during Frog 4000™ portable GC/MS air survey. Potential conduit for vapor intrusion of TCE below floor of basement.
IA-CM-BZD20-A	Breathing zone indoor air quality sample near Column D20-assess the general indoor air quality in the basement over an extended period of time in the area of Column D20
IA-CM-BZD22-A	Breathing zone indoor air quality sample near Column D22-assess the general indoor air quality in the basement over an extended period of time in the area of Column D22
IA-CM-BZD24-A	Breathing zone indoor air quality sample near Column D24-assess the general indoor air quality in the basement over an extended period of time in the area of Column D24
IA-CM-BZD26-A	Breathing zone indoor air quality sample near Column D26-assess the general indoor air quality in the basement over an extended period of time in the area of Column D26
IA-CM-BZD28-A	Breathing zone indoor air quality sample near Column D28-assess the general indoor air quality in the basement over an extended period of time in the area of Column D28

Abbreviations:

µg/m^3- micrograms per cubic meter air
GC/MS - gas chromotography/mass spectrometer
TCE - trichloroethene

Table 3-3
Meteorological Data
Lockheed Martin Middle River Complex, Middle River, Maryland

Month	Day	Precipitation[(1)] (inches)	Weather conditions	Month	Day	Precipitation[(1)] (inches)	Weather conditions
February	25	0.00	rain, thunderstorm	***March***	28	0.00	rain, thunderstorm
	28	0.06	rain		30	0.00	rain, thunderstorm
March	1	0.00	rain		31	0.16	rain
	2	0.00	rain	***April***	1	0.00	rain
	7	0.00	rain		3	0.13	rain
	8	0.00	rain		4	0.00	rain
	10	0.00	rain, snow		6	0.00	rain, thunderstorm
	13	0.02	snow		15	0.11	rain, thunderstorm
	14	0.67	rain, snow		16	0.00	fog
	18	0.02	rain		17	0.00	rain
	19	0.08	rain, snow		20	0.16	rain, thunderstorm
	21	0.00	rain		21	0.00	fog, rain
	27	0.00	fog, rain		22	0.00	rain

[(1)]Weather data from the Martin State Airport weather station

Table 3-4
Groundwater Monitoring-Well Water Levels
Lockheed Martin Middle River Complex, Middle River, Maryland

Date	MW17A	MW18A	MW64A	MW90B	MW96A	MW96B	MW109B
3/6/2017	7.92	4.90	8.55	7.43	13.20	16.20	16.93
3/7/2017	8.00	5.46	8.37	7.55	13.20	16.30	16.50
3/10/2017	8.05	1.42	8.16	7.52	13.18	16.29	17.02
3/17/2017	7.70	1.75	8.47	7.41	13.50	16.23	16.95
3/20/2017	7.76	2.63	8.30	7.22	13.22	16.03	16.80
4/3/2017	7.68	NM	8.22	7.06	13.15	15.84	16.61
4/9/2017	7.62	5.75	7.50	6.96	13.26	15.73	16.44
4/21/2017	7.66	3.57	7.93	6.98	12.96	15.73	16.42

•All measurements are in feet below top of casing.
•NM—not measured

Table 3-5
Basement Floor-Feature Water Levels
Lockheed Martin Middle River Complex, Middle River, Maryland

Date	HRS3	HRS5	HRS6	HRS7	SD2
3/2/2017	3.05	3.04	0.85	3.19	7.95
3/9/2017	3.17	3.04	0.90	2.90	7.95
3/17/2017	3.25	3.18	0.60	3.04	7.90
3/20/2017	3.25	NM	0.90	3.04	7.93
4/21/2017	3.44	3.00	0.94	2.93	7.91

•All measurements are in feet below ground surface (basement floor).
•NM—not measured

TABLE 3-6

WATER SAMPLE LOCATION AND RATIONALE, BUILDING A BASEMENT
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Sample ID	Water Sampling Location and Rationale
WS-SD1-A	Storm drain near Column D26-assess water conditions in storm drain at historical sample location "SG" with historical portable GC/MS air readings of 73 µg/m^3 (Frog 4000™) and 85.92 µg/m^3 (Hapsite ER).
WS-SD2-A	Storm drain lid near Column D18-assess conditions in storm drain where groundwater infiltration may be contributing to vapor intrusion of TCE in basement.
WS-SD3-A	Storm drain lid near Column D19-assess conditions in storm drain where groundwater infiltration may be contributing to vapor intrusion of TCE in basement.
WS-HRS1-A	Sump pit in Heater Room #1 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.
WS-HRS2-A	Sump pit in Heater Room #2 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.
WS-HRS3-A	Sump pit in Heater Room #3 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.
WS-HRS4-A	Sump pit in Heater Room #4 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.
WS-HRS5-A	Sump pit in Heater Room #5-to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement-at historical sample "SP2" that exhibited up to 4,182 µg/m^3 TCE during Frog 4000™ portable GC/MS air survey and 1,400 µg/m^3 in summa canister sample.
WS-HRS6-A	Sump pit in Heater Room #6 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.
WS-HRS7-A	Sump pit in Heater Room #7 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.
WS-LS5-A	Lift Station #5 located just north of Column D16 against eastern wall of basement-convergence of groundwater that is pumped from all sumps in basement before being discharged into sanitary sewer where groundwater in sump may be contributing to vapor intrusion of TCE in basement.
WS-LS5P1-A	Pipe discharging into Lift Station #5 located just north of Column D16 against eastern wall of basement-convergence of groundwater that is pumped from all sumps in basement before being discharged into sanitary sewer where groundwater in sump may be contributing to vapor intrusion of TCE in basement.**-NOT COLLECTED BASED ON FIELD OBSERVATIONS-NO PIPES DISCHARGING STRAIGHT INTO LIFT STATION #5 FROM SUMPS**
WS-LS5P2-A	Pipe discharging into Lift Station #5 located just north of Column D16 against eastern wall of basement-convergence of groundwater that is pumped from all sumps in basement before being discharged into sanitary sewer where groundwater in sump may be contributing to vapor intrusion of TCE in basement.**-NOT COLLECTED BASED ON FIELD OBSERVATIONS-NO PIPES DISCHARGING STRAIGHT INTO LIFT STATION #5 FROM SUMPS**
WS-SP1A-A	Sump pit just north of Column D24 formerly identified as "CP" to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement-exhibited 140 µg/m^3 TCE during previous water sample, 495 µg/m^3 TCE during Frog 4000™ portable GC/MS air survey and 340 µg/m^3 in summa canister sample.**-THIS SAMPLE WAS ADDED BASED ON FIELD OBSERVATIONS**
WS-ELS-A	Sample collected from approximately 1 foot of standing water found behind elevator adjacent to Lift Station #5 in basement.**-THIS SAMPLE WAS ADDED BASED ON FIELD OBSERVATIONS**
WS-BRS-A	Sump pit in Boiler Room to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement-deepest part of basement approximately 15 feet deep.
WS-SP1-A	Sump pit just north of Column D24 formerly identified as "SP" to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement-exhibited 2,700 µg/m^3 TCE during previous water sample, 913 µg/m^3 TCE during Frog 4000™ portable GC/MS air survey and 1,400 µg/m^3 in summa canister sample.

Abbreviations:

µg/m^3- micrograms per cubic meter air
GC/MS - gas chromotography/mass spectrometer
TCE - trichloroethene

FIGURE 3-1

CONTINUOUS AIR MONITORING AND WATER SAMPLING LOCATIONS, BUILDING A BASEMENT

Column D3
Column D4
Sump
Heater Room A-1
WS-HRS1-A
Column D5
Column D6
Boiler Room
Sump
WS-BRS-A
Column D7
Column D8
WS-HRS2-A
Heater Room A-3
Sump
Column D9
Column D10
Column D11
Column D12
Column D13
Column D14
SV-168-A
Approximate Location of Former Vapor Degreaser
Column D15
Elevator
WS-ELS-A
Column D16
Lift Station #5
WS-LS5-A
Sump
Heater Room A-5
WS-HR3S-A
Column D17
Storm Drain Lids
Column D18
WS-SD2-A
WS-SD3-A
Heater Room A-6
WS-HR4S-A
Column D19
Sump
IA-CM-BACK-A
Column D20
Fire Suppression Room
AIR-018-A
Column D21
SV-169-A
IA-CM-BZD22-A
Column D22
Column D23
SV-170-A
IA-CM-SP1-A
WS-SP1-A
Sump Pits
WS-SP1A-A
SV-172-A
IA-CM-FD1-A
Floor Drain
Column D24
IA-CM-BZD24-A
AIR-138-A
SV-173-A
Column D25
IA-CM-FD2-A
Floor Drain
SV-171-A
IA-CM-BZD26-A
Column D26
IA-CM-SD1-A
WS-SD1-A
Storm Drain
SV-175-A
Former Heater Room A-9
IA-CM-HRS5-A
WS-HRS5-A
SV-174-A
SV-176-A
Column D27
Floor Drain
IA-CM-FD3-A
SV-177-A
IA-CM-BZD28-A
Column D28
Stub Up Pipes
IA-CM-SUP-A
AIR-093-A
Hole in Wall
IA-CM-HIW-A
Column D29
Sump
Column D30
Heater Room A-11
IA-CM-HRS6-A
WS-HRS6-A
Utility Corridor to Drop Hammer Building
Column D31
Former Heater Room A-12
IA-CM-HRS7-A
WS-HRS7-A
Sump

Legend

- Continous Air Monitoring Sample Location
- Water Sample Location
- Continuous Monitoring Breathing Zone Sample Location
- Building A Basement
- IAQ Basement
- VMPs through Building A Basement Floor
- VMPs on Building A Main Floor
- VMPs through Building A Basement Wall
- Basement Column
- Ground Floor Layout
- LOC Sample Location

BACK	Background
BRS	Boiler Room Sump
BZ	Breathing Zone
CM	Continuous Monitor
ELS	Elevator Shaft
FD	Floor Drain
HIW	Hole-In-Wall
HRS	Heater Room Sump
LS	Lift Station
SD	Storm Drain
SP	Sump
SUP	Stub-Up-Pipe

N

0 27.5 55 Feet

Lockheed Martin Middle River Complex
Middle River, Maryland

DATE MODIFIED: 05/26/17
CREATED BY: JEE

TETRA TECH

Section 4
Results

This section presents the results of the two-month continuous real-time vapor monitoring, the analytical results of the water samples collected from the selected floor features, and the results of the FROG 4000™ portable gas-chromatograph/mass-spectrometer (GC/MS) survey in the Building A basement at the Lockheed Martin Corporation (Lockheed Martin) Middle River Complex (MRC) in Middle River, Maryland.

4.1 CONTINUOUS REAL-TIME VAPOR-MONITORING RESULTS

Initial results of the continuous-air-monitoring survey demonstrate that SUMMA canister results are a short-term, "snapshot"-type representation of an eight-hour period, and that actual trichloroethene (TCE) concentrations fluctuate over time, as shown in the individual sampling-port trend-graphs in Appendix E. TCE results do not appear to be affected significantly by barometric pressure, but are likely affected by measurable rainfall. Precipitation appears to increase the level of groundwater in the sumps and drains, pushing TCE-contaminated air out of the vadose zone and up through several floor features into the basement.

Upon startup, sampling results positively identified conduits with high levels of TCE vapor. These conduits include heater-room sump HRS5 and sumps SP1 and SP1A. HRS5 is adjacent to column D26 and approximately three feet below the basement floor surface; this sump typically contains approximately two to four inches of standing water. TCE vapor concentrations in HRS5 were initially between 400–600 micrograms per cubic meter ($\mu g/m^3$) within the sump.

A sump (SD1) and floor drain (FD1) near column D24 initially exhibited TCE concentrations of 10–50 µg/m^3. During the initial sampling period between February 24–March 20, 2017, maximum concentrations of TCE in BZD22, BZD24, BZD26, and BZD28 all exceeded the 8.8 µg/m^3[2] screening level for TCE, but the average TCE concentration exceeded its screening level only at the BZD26 location (10.6 µg/L). Table 4-1 presents the minimum, maximum, and average breathing-zone concentrations of TCE at BZD22, BZD24, BZD26, BZD28, and at the background sampling location, between February 24–March 20, 2017.

After baseline data were established, several conduits were covered to measure any impact to indoor air (IA) results. Floor features covered on March 20, 2017 include SD1, FD1, FD2, SP1, and the HRS-5 sump. Sampling locations within covered conduits were converted to breathing-zone locations above the covered feature.

Immediately after the floor features were covered, a significant drop in TCE concentrations was detected in breathing zones, indicating that these floor features might be major contributors to elevated TCE levels detected in indoor air of the Building A basement. Covering the floor features (i.e., removing the source) reduced IA TCE concentrations to below its 8.8 µg/m^3 screening level. Over the next week, gradual increases in TCE concentrations were detected, which led field investigators to cover additional basement features (FD3, HRS7, and a void space in the wall behind HRS5) on March 30, 2017.

Covering the floor features exhibiting the most elevated TCE concentrations initially caused a significant drop in IA TCE levels; however, a state of equilibrium resulted over time and IA TCE concentrations gradually rebounded. Further confirmation of elevated TCE was provided during the FROG 4000™ survey, which indicated that TCE was escaping from the plastic-covered floor features (i.e., HRS5). Table 4-2 presents the minimum, maximum, and average breathing-zone concentrations at BZD22, BZD24, BZD26, BZD28, and that of the background sample, between March 20–April 13, 2017.

[2] The 8.8 µg/m^3 is based on an 8-hour workday exposure over a 30-year time period. A site-specific TCE screening level of 35 µg/m^3 for indoor air has been derived for the Building A basement based on limited exposure potential in the basement. The screening level was documented in a letter dated June 29, 2017 and received written approval from the Maryland Department of the Environment (MDE) on July 6, 2017. The revised site-specific TCE screening level of 35 µg/m^3 will be implemented for future sampling events.

On April 13, 2017, all plastic covers were removed from the conduits to ensure that TCE-contaminated air was not being re-routed to the main floor of Building A. Whether the ductwork from the former heating rooms in the basement has all been disconnected to the main floor is undetermined. Interviews with on-site personnel (EMCOR-on-site maintenance contractor) indicate that the basement heater-room sumps are connected to air vents on the main floor via air ducts. This was historically how heating was provided to the main floor of Building A. TCE concentrations spiked once the covers had been removed (Table 4-3); however, after approximately four hours, concentrations in the breathing zone equilibrated to the levels detected before the covers had been removed. A slight increase in equilibrated concentrations was detected, possibly due to precipitation and its effects on groundwater.

Three trend-graphs showing TCE sampling results for breathing-zone samples BZD24, BZD26, and BZD28 are in Appendix F. These graphs show TCE concentrations during the initial sampling period (from February 24 through March 20, 2017), while the conduits were covered (from March 20 through April 13, 2017), and after removing the covers (from April 13 through April 24, 2017). Decreased concentrations of TCE are evident when the floor features were covered, and concentration spikes are evident after coverings had been removed followed by equilibration.

4.2 WATER-MONITORING AND SAMPLING RESULTS

Data for the 15 water samples collected from selected floor features in the Building A basement are in Appendix D. These include a full data table, a summary of detections table, and a statistics table. Sampled floor features include 10 sump samples (HRS1 through HRS7, SP1, SP1A and BRS), three storm-drain samples (SD1 through SD3), one lift-station sample (LS5), and one elevator-shaft sample (ELS). Eight volatile organic compounds (VOCs) were detected in the basement water samples. Table 4-4 summarizes the water sampling results.

TCE is the most frequently detected VOC (in eight of 15 samples), with the highest concentration (5,100 µg/L) detected at heater-room sump HRS5. This result is an order of magnitude (i.e., a power of 10, or 10 times) greater than the concentration of TCE (420 µg/L) detected in the water sample collected from this location in May 2016 (Tetra Tech, Inc. [Tetra Tech], 2016a). Figure 4-1 displays TCE concentrations detected in water samples. Other sampling locations exhibiting elevated TCE include SP1A (440 µg/L) and SP1 (160 µg/L).

These floor features are consistent with areas that have historically exhibited the highest TCE levels (air, water, and portable-GC/MS sampling), predominantly in the areas around column D24 (SP1 and SP1A) and column D26 (HRS5). TCE concentrations detected at four sumps (SP1, SP1A, HRS5 and HRS7) are two to three orders of magnitude (i.e., three powers of 10, or 1,000 times) greater than the maximum contaminant level (5 µg/L), which is a drinking water standard. Although the use of this screening level is not relevant in this context, it provides context for comparison.

TCE was detected at lower levels in the southern portion of the basement (14 µg/L at HRS6 and 41 µg/L at HRS7). TCE was not detected in samples collected in the northern portion of the basement, including water samples from heater-room sumps (HRS1, HRS2, and HRS3), the boiler-room sump (BRS), and the elevator shaft (ELS). Sumps HRS5, HRS7, SP1, and SP1A are part of the sump network that mitigates groundwater infiltration into the Building A basement.

Sump pumps installed in the sumps and associated piping might possibly be connected to lift station #5, which is near column D16 in the central portion of the Building A basement. Water from lift station #5 is most likely discharged into the sanitary-sewer system. A sample of water collected directly from the lift station (LS5) exhibited a low concentration (2.6 µg/L) of TCE. Lift station #5 conditions are dynamic; various pipes discharge into it, including the pipe carrying heating, ventilation, and air conditioning (HVAC)-condensate water. The HVAC water may be diluting any TCE-contaminated water entering the lift station. The low TCE concentration (2.6 µg/L) detected in lift station #5 suggests that any impact from groundwater appears to be minimal.

Over the two-month continuous-air-monitoring survey, only one heater-room sump pump (in heater-room sump HRS4) operated consistently, due to a fire-water-line pump-seal lubrication system in the adjacent fire-suppression room that empties into it. The water-lubrication system maintains water flow on the fire-pump valves to ensure that they are lubricated properly, should a fire occur on-site. Other heater-room sump-pumps in the southern portion of the basement (HRS5, HRS6, and HRS7) were not operating during the survey. They might be faulty sump pumps, or their sump floats might be set to a high or an equilibrium level.

Despite significant precipitation, the water level in these latter sumps did not change commensurate with the level of precipitation. For example, the water level in HRS5 over the two-month survey remained fairly consistent (no more than a few inches of water), whereas the water level in HRS6 was consistently high (within one foot of the basement floor). The water levels in both sumps remained relatively constant, even during significant precipitation.

In addition to the sumps, three water samples were collected from the storm-drain system (SD1, SD2, and SD3). SD1 is near column D26, and SD2 and SD3 are farther north near columns D18/D19. No VOCs were detected in samples SD2 and SD3, but four VOCs were detected at low levels in SD1: 1,1,1-TCA (7.6 µg/L), 1,1-DCE (1 µg/L), TCE (0.7*J* µg/L), and 1,1-DCA (0.26*J* µg/L).

Low levels of VOCs may be entering the storm-drain system through underground breaches (i.e., cracks and voids) in the pipes, but because TCE levels in all three storm-drain samples are low, TCE in the storm-drain network does not appear to be a concern. Similar to the results of the recent continuous-air-monitoring survey and historical air and water sampling (March–May 2016), sumps HRS5, SP1, and SP1A exhibited the highest TCE levels and would be the targets for possible mitigation efforts. Consistent findings after one year suggest minimal groundwater migration within basement connections.

4.3 FROG 4000™ SURVEY RESULTS

Table 4-5 summarizes the FROG 4000™ survey results. They suggest that TCE was being released at low levels from the covered conduits through small breaches in the plastic. The highest TCE detections (> 350 parts per billion [ppb]) during the FROG 4000™ survey were from behind the plastic covering the wall opening associated with heater-room sump HRS5, and from within the plastic that was wrapped around the sump-pump pipe exiting heater-room sump HRS5.

Other minor concentrations of TCE (< 7 ppb) were detected in several other basement features, including pipe chases, floor drains, and stub-up pipes, which would be expected, since they are near the former plating shop on the main floor of Building A (i.e., pipe chases coming out of the eastern wall of the basement run under the former plating shop area). Although secondary floor features might provide a minor contribution to the elevated TCE concentrations detected in indoor air in the Building A basement, this survey confirms that the floor features adjacent to column D24

(SP1, SP1A, and FD1) and column D26 (HRS5 and FD2) are the primary contributors for TCE in IA, and they should be the focus of future mitigation efforts. A TCE concentration of 10 ppb was detected in the breathing-zone sample collected at column D26 (BZD26).

Table 4-1
Initial Trichloroethene Results in Breathing Zone
February 4–March 20, 2017
Lockheed Martin Middle River Complex, Middle River, Maryland

Initial trichloroethene concentrations			
Location	**Minimum concentration**	**Maximum concentration**	**Average concentration**
BACK	0.0	**13.4**	6.2
BZD22	0.0	**16.5**	7.4
BZD24	2.3	**17.9**	7.8
BZD26	3.0	**23.3**	**10.7**
BZD28	0.0	**11.8**	3.7

•All concentrations are in microgram(s) per cubic meter (µg/m^3).

•**Bold** indicates an exceedance of the TCE IA screening level (8.8 µg/m^3)

Table 4-2
Trichloroethene Results in Breathing Zone after Covering Conduits
March 20–April 13, 2017
Lockheed Martin Middle River Complex, Middle River, Maryland

Trichloroethene concentrations—sumps covered			
Location	**Minimum concentration**	**Maximum concentration**	**Average concentration**
BACK	0.0	**14.4**	3.4
BZD22	0.0	7.8	2.1
BZD24	0.0	7.9	3.6
BZD26	0.0	**14.2**	4.5
BZD28	0.0	**10.5**	2.5

•All concentrations are in micrograms per cubic meter ($\mu g/m^3$).

•**Bold** indicates an exceedance of TCE IA screening level (8.8 $\mu g/m^3$)

• The 8.8 $\mu g/m^3$ is based on an 8-hour workday exposure over a 30-year time period. A site-specific TCE screening level of 35 $\mu g/m^3$ for indoor air has been derived for the Building A basement based on limited exposure potential in the basement. The screening level was documented in a letter dated June 29, 2017 and received written approval from the Maryland Department of the Environment (MDE) on July 6, 2017. The revised site-specific TCE screening level of 35 $\mu g/m^3$ will be implemented for future sampling events.

Table 4-3
Trichloroethene Results in Breathing Zone after Uncovering Conduits after Achieving Equilibrium, April 13–April 18, 2017
Lockheed Martin Middle River Complex, Middle River, Maryland

Trichloroethene concentrations—sumps uncovered			
Location	**Minimum concentration**	**Maximum concentration**	**Average concentration**
BACK	2.8	**16.6**	8.0
BZD22	4.2	**19.6**	**9.7**
BZD24	4.4	**19.8**	**10.3**
BZD26	5.4	**21.7**	**11.1**
BZD28	2.3	**19.8**	7.5

- All concentrations are in microgram(s) per cubic meter ($\mu g/m^3$).
- **Bold** indicates an exceedance of TCE IA screening level (8.8 $\mu g/m^3$).
- The 8.8 $\mu g/m^3$ is based on an 8-hour workday exposure over a 30-year time period. A site-specific TCE screening level of 35 $\mu g/m^3$ for indoor air has been derived for the Building A basement based on limited exposure potential in the basement. The screening level was documented in a letter dated June 29, 2017 and received written approval from the Maryland Department of the Environment (MDE) on July 6, 2017. The revised site-specific TCE screening level of 35 $\mu g/m^3$ will be implemented for future sampling events.
- Immediately after removing the plastic covering, TCE concentrations from the five locations spiked ranging from 98 $\mu g/m^3$ in BZD-28 to 210 $\mu g/m^3$ in BZD-24, but then returned to equilibrium after approximately four hours.

Table 4-4
Water Sampling Results, Building A Basement
Lockheed Martin Middle River Complex, Middle River, Maryland

Analyte	Number of samples detected	Minimum detected concentration	Maximum detected concentration
cis-1,2-Dichloroethene (*cis*-1,2-DCE)	5/15	0.47*J*	76*J*
1,1-Dichloroethene (1,1-DCE)	7/15	0.67*J*	390
1,1-Dichloroethane (1,1-DCA)	4/15	0.26*J*	5.7
Naphthalene	1/15	—	0.69*J*
Toluene	1/15	—	1.0
trans-1,2-DCE	1/15	—	0.33*J*
1,1,1- Trichloroethane (1,1,1-TCA)	1/15	0.00	7.6
Trichloroethene (TCE)	8/15	0.70*J*	5,100

•All concentrations are in microgram(s) per liter (µg/L).

TABLE 4-5

PORTABLE GC/MS SURVEY RESULTS, BUILDING A BASEMENT
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

Sample ID	Date	TCE reading (ppb)	Sample Location in Building A Basement
Log 731	4/7/2017	0.0	Breathing zone column D24
Log 732	4/7/2017	0.0	1 foot above HRS7
Log 733	4/7/2017	0.0	Pipe conduit near column D31 at top of wall
Log 734	4/7/2017	0.0	Just off floor of utility corridor
Log 735	4/7/2017	0.0	Pipe coming out of south wall of basement near ceiling
Log 736	4/7/2017	0.0	6 feet northwest of column D31 gravel filled hole with pipe in floor
Log 737	4/7/2017	0.0	Small leak/hole in west wall of basement approximately 10 feet north of south wall
Log 738	4/7/2017	0.0	Hole left of HRS7 where floor meets wall just to left of sump
Log 739	4/7/2017	0.0	HRS6 A-11 heater room sump
Log 740	4/7/2017	0.0	Small floor drain 3-4 feet northwest column D29
Log 741	4/7/2017	0.0	Stub up pipe
Log 742	4/7/2017	0.0	Pipe chase top of east wall in line with column D27
Log 743	4/7/2017	0.0	Industrial water plating line tank
Log 744	4/7/2017	0.0	Industrial water car wash tank
Log 745	4/7/2017	>495 (pegged)	HRS5 in between plastic and stick-up sump pipe
Log 746	4/7/2017	0.0	Blank-out hatch window
Log 747	4/7/2017	0.0	Blank-out hatch window
Log 748	4/7/2017	353	Behind HRS5 plastic covering wall behind sump
Log 749	4/7/2017	0.0	Blank
Log 750	4/7/2017	0.0	Blank
Log 751	4/7/2017	0.0	Recalibration
Log 752	4/7/2017	0.0	Above floor drain FD2 near column D26
Log 753	4/7/2017	0.0	Charcoal blank
Log 754	4/7/2017	6.0	Above floor drain FD3
Log 755	4/7/2017	0.0	Charcoal blank
Log 756	4/7/2017	5.8	Small drain 6 feet northwest column D25 by air purifying unit
Log 757	4/7/2017	0.0	Utility corridor column D25 west wall
Log 758	4/7/2017	5.5	Covered drain down in sump between columns D23/24
Log 759	4/7/2017	6.2	Stub-up pipe northwest of column D25 against west wall 8 feet northwest of 138-A
Log 760	4/7/2017	6.2	Stub-up pipe west of column D25 directly west of Log 756 small drain and 138-A
Log 761	4/7/2017	10.0	Breathing zone column D26

TABLE 4-5

PORTABLE GC/MS SURVEY RESULTS, BUILDING A BASEMENT
LOCKHEED MARTIN MIDDLE RIVER COMPLEX, MIDDLE RIVER, MARYLAND

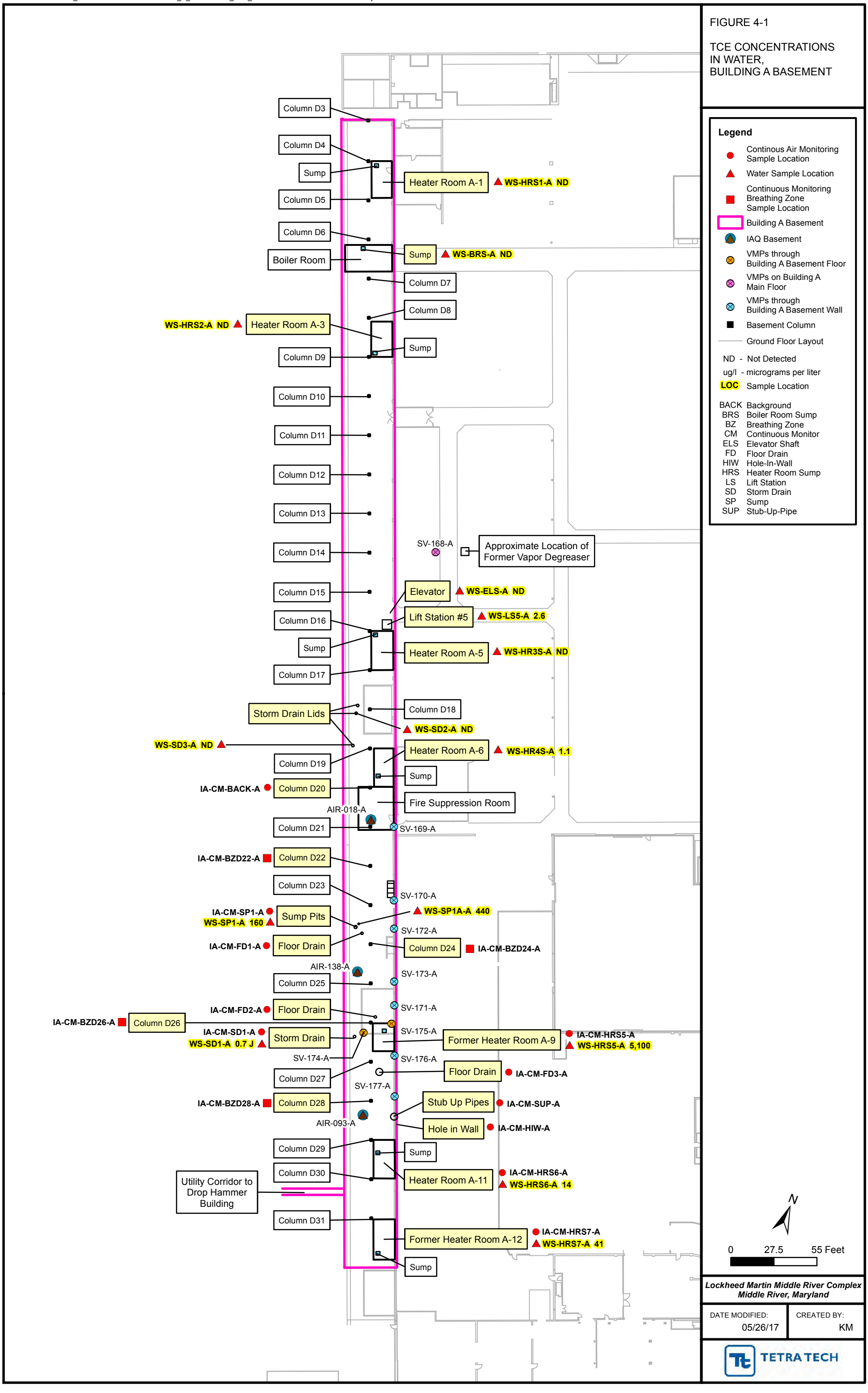
Sample ID	Date	TCE reading (ppb)	Sample Location in Building A Basement
Log 762	4/7/2017	0.0	No sample
Log 763	4/7/2017	6.6	Pipe chase east wall by ceiling east/southeast of column D25
Log 764	4/7/2017	6.4	Pipe chase east wall by ceiling directly east of column D23
Log 765	4/7/2017	0.0	Storm drain lid 10 feet west/southwest column D18
Log 766	4/7/2017	0.0	Charcoal blank
Log 767	4/7/2017	0.0	Charcoal blank
Log 768	4/7/2017	0.0	Recalibration

Abbreviations:
GC/MS - gas chromotography/mass spectrometer
ppb - parts per billion
TCE - trichloroethene

PGH P:\GIS\MIDDLE_RIVER\MAPDOCS\MXD\BLDG_A_BASEMENT_TCE_CONCENTRATIONS.MXD 05/26/17 jee

FIGURE 4-1

TCE CONCENTRATIONS IN WATER, BUILDING A BASEMENT



Legend

- Continous Air Monitoring Sample Location
- Water Sample Location
- Continuous Monitoring Breathing Zone Sample Location
- Building A Basement
- IAQ Basement
- VMPs through Building A Basement Floor
- VMPs on Building A Main Floor
- VMPs through Building A Basement Wall
- Basement Column
- Ground Floor Layout

ND - Not Detected
ug/l - micrograms per liter
LOC Sample Location

BACK	Background
BRS	Boiler Room Sump
BZ	Breathing Zone
CM	Continuous Monitor
ELS	Elevator Shaft
FD	Floor Drain
HIW	Hole-In-Wall
HRS	Heater Room Sump
LS	Lift Station
SD	Storm Drain
SP	Sump
SUP	Stub-Up-Pipe

N

0 27.5 55 Feet

Lockheed Martin Middle River Complex
Middle River, Maryland

DATE MODIFIED:	CREATED BY:
05/26/17	KM

TETRA TECH

Section 5
Conclusions

Trichloroethene (TCE) is beneath the Building A basement floor and behind the eastern basement wall, likely originating from beneath Building A due to spills from large vapor-degreasers formerly located on the main floor of the building, and spills from the former plating shop on that floor. TCE likely migrated through soil to groundwater beneath the building main floor, and subsequently behind the basement wall and below the basement floor. Elevated TCE concentrations have been detected in sub-slab vapor, sump water, and occasionally in indoor air in the basement. Previous investigations have identified sumps and floor drains in Building A basement as potential sources of TCE vapor from groundwater beneath the basement floor. Indoor air quality on the Building A main floor has been acceptable (according to regulatory guidelines), with rare exceptions. Elevated TCE soil vapor concentrations beneath Building A were addressed with a sub-slab depressurization-system (SSDS) installed in 2008 and then expanded in 2010 and 2016.

Trichloroethene has been a prevalent contaminant of concern in indoor air in the Building A basement. Trichloroethene was detected above its screening level in indoor air in the Building A basement using conventional sampling methods (e.g., SUMMA canister sampling) during a recent round of investigation (February 2016) and during the March 2016 survey using the FROG 4000™ portable gas-chromatograph/mass-spectrometer (GC/MS) instrument. Data collected using the FROG 4000™ instrument were used to locate possible indoor sources of trichloroethene and sub-slab-vapor conduits (Tetra Tech, Inc. [Tetra Tech], 2016a). The screening helped identify the floor features exhibiting elevated trichloroethene concentrations, and these areas were further confirmed with continuous-air-monitoring results, water sampling, and a FROG 4000™ portable-GC/MS survey, with the results of all of these presented in this report.

Previous investigations have focused on shorter-term sampling (SUMMA canisters). The continuous real-time vapor-monitoring system allowed for real-time tracking of both sub-slab and indoor-air concentrations over an extended period. Conducting the survey over a two-month period enabled trends to be established, and provides insight into how other factors such as barometric pressure,

differential pressure, weather, significant rainfall, and heating, ventilation, and air conditioning (HVAC) controls affect indoor air quality and subsequent TCE concentrations in the Building A basement.

Although barometric pressure does not appear to have had much effect on indoor air conditions, significant rainfall does appear to increase TCE levels in indoor air. Precipitation caused sub-foundation pressure to increase, which is correlated with elevated TCE concentrations in indoor air. HVAC conditions over the two-month survey remained relatively unchanged.

Upon startup of the continuous air monitor, sampling results positively identified conduits with high levels of TCE vapor. These conduits include heater-room sump HRS5 and sumps SP1 and SP1A; these features exhibited elevated trichloroethene levels during previous investigations. Previous investigations have shown that trichloroethene is detectable in the basement soil-vapor behind the eastern wall of the Building A basement (below the former plating shop area previously located on the Building A main floor), beneath the basement floor, in groundwater accumulated in sumps, and in indoor air (from migration of soil vapor into indoor air). The highest trichloroethene concentrations in soil vapor, groundwater, and indoor air are in the HRS5 sump area (near column D26), followed by the SP1/SP1A sump area near column D24.

After floor features in the basement were covered, trichloroethene levels in indoor air dropped significantly, and then proceeded to rebound to an equilibrium state over time. Following removal of the plastic covering these features, concentrations of trichloroethene quickly spiked and then equilibrated to the levels seen before placing the covers. These data, along with the results of the FROG 4000™ portable-GC/MS survey, suggest that TCE in the floor features HRS5, SP1, and SP1A are the main contributors to elevated TCE concentrations in indoor air in the Building A basement.

No other significant sources of TCE were identified during the FROG 4000™ survey; however, samples collected from small breaches in the plastic covering over sumps (e.g., HRS5) show that TCE-contaminated air was still escaping, which resulted in the subsequent equilibrium state while the covers remained, and drastic rebound after the covers were removed. Studies to date suggest that trichloroethene in indoor air appears to result from either air venting from select features in the basement floor, or the volatilization of contamination present in impacted water under the former plating shop through sumps, drains, and other floor and wall features in the basement. This

investigation program provided information about the major contributors to TCE in indoor air in the Building A basement. Further investigation and mitigation options are being considered by Lockheed Martin as the next steps beyond the investigation results summarized in this report.

Section 6
References

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2. Maryland Department of the Environment (MDE), 2006. *Voluntary Cleanup Program Guidance Document.* Environmental Restoration and Redevelopment Program, Maryland Department of the Environment. March 17.

3. Tetra Tech, Inc. (Tetra Tech), 2006. *Site Characterization Report. Lockheed Martin Middle River Complex. Revision 1.* Report prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. May.

4. Tetra Tech, Inc. (Tetra Tech), 2015a. *2016–2017 Groundwater and Surface Water Monitoring Work Plan, Lockheed Martin Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. December.

5. Tetra Tech, Inc. (Tetra Tech), 2015b. *Indoor Air Quality and Sub-Slab-Vapor Sampling Work Plan Rounds 20 through 23 Buildings A, B, and C, Lockheed Martin Middle River Complex.* Report prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. September.

6. Tetra Tech, Inc. (Tetra Tech), 2016a. *Block I Building A and Building A Basement Vapor-Intrusion Investigation Report, Lockheed Martin Middle River Complex.* Report prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. August.

7. Tetra Tech, Inc. (Tetra Tech), 2016b. *Block I Building A and Building A Basement Supplemental Vapor-Intrusion Investigation Report, Lockheed Martin Middle River Complex.* Report prepared by Tetra Tech, Inc., Germantown, Maryland for Lockheed Martin Corporation, Bethesda, Maryland. August.

8. United States Environmental Protection Agency (USEPA), 2017a. *National Functional Guidelines for Inorganic Superfund Methods Data Review*. EPA-540-R-2017-001. 138 pp.

9. United States Environmental Protection Agency (USEPA), 2017b. *National Functional Guidelines for Organic Superfund Methods Data Review*. EPA-540-R-2017-002. 250 pp.

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APPENDIX A—PHOTOGRAPHIC LOG OF BUILDING A BASEMENT FLOOR-FEATURES

Photo 1 − Sump pit (HRS5) located east of Column D26.

Photo 2 − Storm drain lid (SD1) located west of Column D26.

Photo 4 − Large cover plate (SP1) located near Column D24.

Photo 5 − Covered floor drain (FD1) located near Column D24.

Photo 6 − Broad view of three floor features (SP1, FD1 and other sump) located near column D24.

Photo 7 − Frog 4000™ portable gas chromatograph/mass spectrometer (GC/MS).

Photo 8 − HRS5 sump covered in plastic

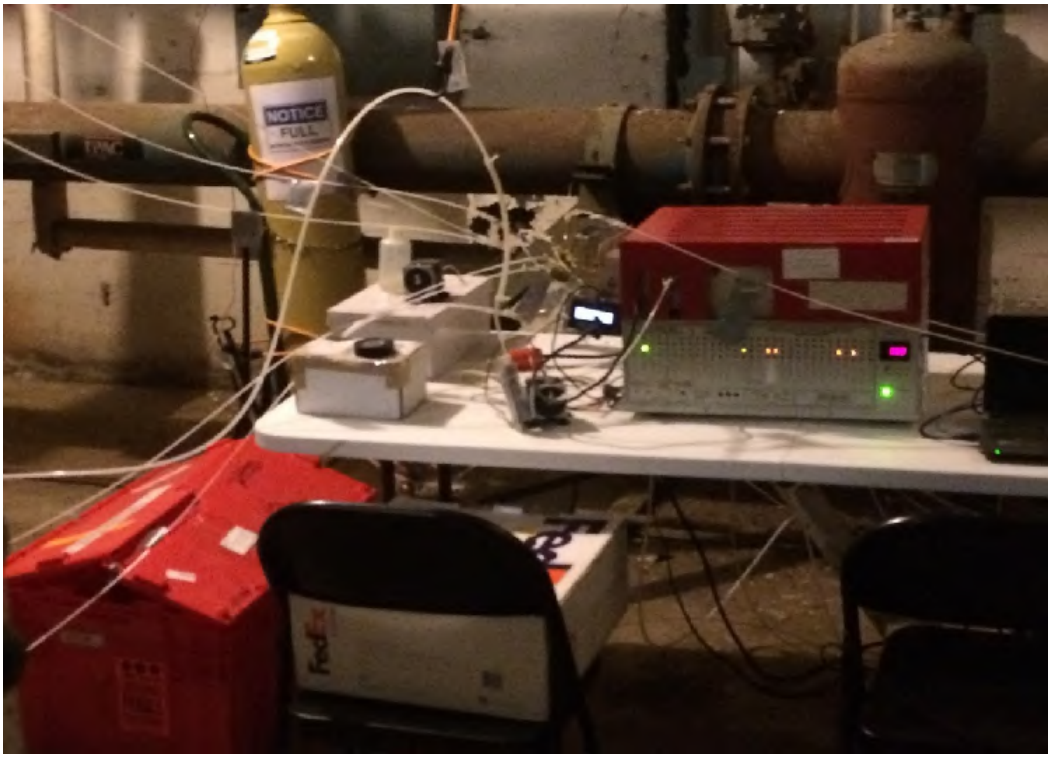


Photo 9 − Continuous air monitor instrument

APPENDIX B—FIELD-SAMPLING LOG SHEETS

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-SD1-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1050

WELL INFORMATION:

Well ID :		**Depth to Water:**	2.25
Well Diameter (in):		**Depth to Bottom:**	2.80
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab

EQUIPMENT INFORMATION:

Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Storm drain near Column D26-assess water conditions in storm drain at historical sample location "SG" with historical portable GC/MS air readings of 73 µg/m3 (Frog 4000™) and 85.92 µg/m3 (Hapsite ER).

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-SD2-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1445
WELL INFORMATION:			
Well ID :		**Depth to Water:**	7.95
Well Diameter (in):		**Depth to Bottom:**	NM
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab
EQUIPMENT INFORMATION:			
Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Storm drain lid near Column D18-assess conditions in storm drain where groundwater infiltration may be contributing to vapor intrusion of TCE in basement.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-SD3-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1500
WELL INFORMATION:			
Well ID :		**Depth to Water:**	8.15
Well Diameter (in):		**Depth to Bottom:**	8.35
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab
EQUIPMENT INFORMATION:			
Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Storm drain lid near Column D19-assess conditions in storm drain where groundwater infiltration may be contributing to vapor intrusion of TCE in basement.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-HRS1-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1345
WELL INFORMATION:			
Well ID :		**Depth to Water:**	0.93
Well Diameter (in):		**Depth to Bottom:**	3.63
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab
EQUIPMENT INFORMATION:			
Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Sump pit in Heater Room #1 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-HRS2-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1405
WELL INFORMATION:			
Well ID :		**Depth to Water:**	3.57
Well Diameter (in):		**Depth to Bottom:**	3.60
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab
EQUIPMENT INFORMATION:			
Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Sump pit in Heater Room #2 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-HRS3-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1330
WELL INFORMATION:			
Well ID :		**Depth to Water:**	3.05
Well Diameter (in):		**Depth to Bottom:**	3.65
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab
EQUIPMENT INFORMATION:			
Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Sump pit in Heater Room #3 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-HRS4-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1420
WELL INFORMATION:			
Well ID :		**Depth to Water:**	4.58
Well Diameter (in):		**Depth to Bottom:**	4.90
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab
EQUIPMENT INFORMATION:			
Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Sump pit in Heater Room #4 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-HRS5-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1140
WELL INFORMATION:			
Well ID :		**Depth to Water:**	3.04
Well Diameter (in):		**Depth to Bottom:**	3.40
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab
EQUIPMENT INFORMATION:			
Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Sump pit in Heater Room #5-to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement-at historical sample "SP2" that exhibited up to 4,182 µg/m3 TCE during Frog 4000™ portable GC/MS air survey and 1,400 µg/m3 in summa canister sample.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-HRS6-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1130
WELL INFORMATION:			
Well ID :		**Depth to Water:**	0.85
Well Diameter (in):		**Depth to Bottom:**	3.55
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab
EQUIPMENT INFORMATION:			
Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Sump pit in Heater Room #6 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-HRS7-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1124
WELL INFORMATION:			
Well ID :		**Depth to Water:**	3.19
Well Diameter (in):		**Depth to Bottom:**	3.35
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab
EQUIPMENT INFORMATION:			
Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Sump pit in Heater Room #7 to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-LS5-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1200

WELL INFORMATION:

Well ID :		**Depth to Water:**	3.71
Well Diameter (in):		**Depth to Bottom:**	4.60
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab

EQUIPMENT INFORMATION:

Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Lift Station #5 located just north of Column D16 against eastern wall of basement-convergence of groundwater that is pumped from all sumps in basement before being discharged into sanitary sewer where groundwater in sump may be contributing to vapor intrusion of TCE in basement.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-BRS-A-030317	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/03/17
MS/MSD Collected:	YES NO	**Sample Time:**	1020

WELL INFORMATION:

Well ID :		**Depth to Water:**	22.24
Well Diameter (in):		**Depth to Bottom:**	23.20
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab

EQUIPMENT INFORMATION:

Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Sump pit in Boiler Room to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement-deepest part of basement approximately 15 feet deep.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-SP1-A-030217	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/02/17
MS/MSD Collected:	YES NO	**Sample Time:**	1104

WELL INFORMATION:

Well ID :		**Depth to Water:**	3.37
Well Diameter (in):		**Depth to Bottom:**	7.15
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab

EQUIPMENT INFORMATION:

Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Sump pit just north of Column D24 formerly identified as "SP" to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement-exhibited 2,700 µg/m3 TCE during previous water sample, 913 µg/m3 TCE during Frog 4000™ portable GC/MS air survey and 1,400 µg/m3 in summa canister sample.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-SP1A-A-030317	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/03/17
MS/MSD Collected:	YES NO	**Sample Time:**	1045

WELL INFORMATION:

Well ID :		**Depth to Water:**	NM
Well Diameter (in):		**Depth to Bottom:**	NM
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab

EQUIPMENT INFORMATION:

Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Sump pit just north of Column D24 formerly identified as "CP" to assess water conditions in sump where groundwater infiltration in sump may be contributing to vapor intrusion of TCE in basement-exhibited 140 µg/m3 TCE during previous water sample, 495 µg/m3 TCE during Frog 4000™ portable GC/MS air survey and 340 µg/m3 in summa canister sample.

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: Building A Basement Water Sampling
Project Site Name: MRC
Project No.: 112IC08109

Sample ID:	WS-ELS-A-030317	**Sampled By:**	T. Apanavage
QA/QC Duplicate ID:		**Sample Date:**	03/03/17
MS/MSD Collected:	YES NO	**Sample Time:**	1100

WELL INFORMATION:

Well ID :		**Depth to Water:**	NM
Well Diameter (in):		**Depth to Bottom:**	NM
Top of Screen (ft-BTOR):			
Bottom of Screen (ft-BTOR):			
Total Well Depth (ft-BTOR):		**Sample Method:**	Grab

EQUIPMENT INFORMATION:

Water Quality Instrument:		**Pump Controller:**	
Turbidity Meter:			

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (gal. / L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (% or ppt)	Other

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
VOCs	8260	HCl	3	40mL	VOA	X

OBSERVATIONS / NOTES:

Sample collected from approximately 1 foot of standing water found behind elevator adjacent to Lift Station #5 in basement.

Coordinates:	N	E	Signature(s):

APPENDIX C—DATA-VALIDATION REPORT AND CHAIN OF CUSTODY FORMS

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **T. APANAVAGE** **DATE:** **MAY 4, 2017**

FROM: **J. SAMCHUCK** **COPIES:** **DV FILE**

SUBJECT: **DATA VALIDATION – VOC**
LOCKHEED MARTIN CORPORATION (LMC) – MIDDLE RIVER COMPLEX (MRC)
SDG 240-76348-1 BUILDING A BASEMENT

SAMPLES: 16/Aqueous/

WS-ELS-A-030317	WS-HRS1-A-030217	WS-HRS2-A-030217
WS-HRS3-A-030217	WS-HRS4-A-030217	WS-HRS5-A-030217
WS-HRS6-A-030217	WS-HRS7-A-030217	WS-LS5-A-030217
WS-SD1-A-030217	WS-SD2-A-030217	WS-SD3-A-030217
WS-SP1-A-030217	WS-SP1A-A-030317	TB-030317

Overview

The sample set for LMC-MRC, SDG 240-76348-1consisted of fifteen (15) aqueous environmental samples and one (1) trip blank. The samples were analyzed for volatile organic compounds (VOC). No field duplicate sample pair was included in this SDG.

The samples were collected by Tetra Tech, Inc. on March 2 and 3, 2017 and analyzed by TestAmerica, Inc. All analyses were conducted in accordance with SW-846 Method 8260C for VOC analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters: data completeness, holding times, GC/MS tuning, initial/continuing calibrations, laboratory method/preparation blanks, surrogate spike recoveries, laboratory control sample/laboratory control sample duplicate results, internal standard areas and recoveries, chromatographic resolution, analyte identification, analyte quantitation, and detection limits. Areas of concern are listed below.

Major

No major issues were noted.

Minor

- A TIC search was performed for the compound chlorodifluoromethane. The laboratory did not detect this compound in the samples in this SDG. The laboratory assigned a Reporting Limit (RL) of 1 µg/L. Because the GC/MS was not calibrated for this compound, the RL is considered to be an estimated limit. The non-detected results reported for chlorodifluoromethane were qualified as estimated, (UJ).

- Continuing calibration percent difference (%D) greater than 20 percent was noted for dichlorodifluoromethane on 3/9/2017 at 11:31 on instrument A3UX11 affecting all samples. The nondetected results for these parameters were qualified as estimated (UJ).

- Detected results reported below the Reporting Limit (RL) limit but above the Method Detection Limit (MDL) were qualified as estimated, (J).

Notes

The following samples were analyzed at dilution resulting in elevated detection limits for nondetected results: WS-HRS5-A-030217 (250X), WS-SP1-A-030217 (5X), and WS-SP1A-A-030317 (20X).

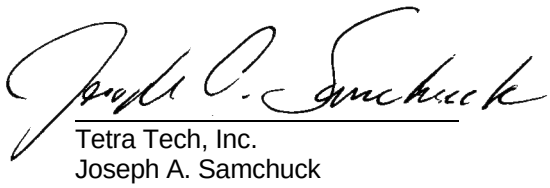
Non-detected results were reported to the MDL.

Executive Summary

Laboratory Performance: Calibration noncompliance was noted for dichlorodifluoromethane. Non-detected chlorodifluoromethane results were estimated because detection was evaluated via TIC library search.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review" (January 2017). The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

PROJ_NO: 08109	NSAMPLE	TB-030317			WS-BRS-A-030317			WS-ELS-A-030317			WS-HRS1-A-030217		
SDG: 240-76348-1	LAB_ID	240-76348-16			240-76348-12			240-76348-15			240-76348-4		
FRACTION: OV	SAMP_DATE	3/3/2017			3/3/2017			3/3/2017			3/2/2017		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.23	U		0.23	U		0.23	U		0.23	U	
1,1,2-TRICHLOROETHANE		0.34	U		0.34	U		0.34	U		0.34	U	
1,1-DICHLOROETHANE		0.25	U		0.25	U		0.25	U		0.25	U	
1,1-DICHLOROETHENE		0.27	U		0.27	U		0.27	U		0.27	U	
1,2,3-TRIMETHYLBENZENE		0.22	U		0.22	U		0.22	U		0.22	U	
1,2,4-TRICHLOROBENZENE		0.27	U		0.27	U		0.27	U		0.27	U	
1,2,4-TRIMETHYLBENZENE		0.24	U		0.24	U		0.24	U		0.24	U	
1,2-DICHLOROETHANE		0.3	U		0.3	U		0.3	U		0.3	U	
1,3,5-TRIMETHYLBENZENE		0.24	U		0.24	U		0.24	U		0.24	U	
BENZENE		0.28	U		0.28	U		0.28	U		0.28	U	
CARBON TETRACHLORIDE		0.35	U		0.35	U		0.35	U		0.35	U	
CHLORODIFLUOROMETHANE		1	UJ	Q	1	UJ	Q	1	UJ	Q	1	UJ	Q
CHLOROFORM		0.31	U		0.31	U		0.31	U		0.31	U	
CIS-1,2-DICHLOROETHENE		0.3	U		0.3	U		0.3	U		0.3	U	
DICHLORODIFLUOROMETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
ETHYLBENZENE		0.26	U		0.26	U		0.26	U		0.26	U	
METHYL TERT-BUTYL ETHER		0.27	U		0.27	U		0.27	U		0.27	U	
METHYLENE CHLORIDE		0.53	U		0.53	U		0.53	U		0.53	U	
NAPHTHALENE		0.25	U		0.25	U		0.25	U		0.25	U	
TETRACHLOROETHENE		0.3	U		0.3	U		0.3	U		0.3	U	
TOLUENE		0.23	U		0.23	U		0.23	U		0.23	U	
TOTAL XYLENES		0.24	U		0.24	U		0.24	U		0.24	U	
TRANS-1,2-DICHLOROETHENE		0.29	U		0.29	U		0.29	U		0.29	U	
TRICHLOROETHENE		0.33	U		0.33	U		0.33	U		0.33	U	
VINYL CHLORIDE		0.45	U		0.45	U		0.45	U		0.45	U	

PROJ_NO: 08109	NSAMPLE	WS-HRS2-A-030217			WS-HRS3-A-030217			WS-HRS4-A-030217			WS-HRS5-A-030217		
SDG: 240-76348-1	LAB_ID	240-76348-5			240-76348-6			240-76348-7			240-76348-8		
FRACTION: OV	SAMP_DATE	3/2/2017			3/2/2017			3/2/2017			3/2/2017		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.23	U		0.23	U		0.23	U		58	U	
1,1,2-TRICHLOROETHANE		0.34	U		0.34	U		0.34	U		85	U	
1,1-DICHLOROETHANE		0.25	U		0.25	U		0.25	U		63	U	
1,1-DICHLOROETHENE		0.27	U		0.27	U		0.99	J	P	390		
1,2,3-TRIMETHYLBENZENE		0.22	U		0.22	U		0.22	U		55	U	
1,2,4-TRICHLOROBENZENE		0.27	U		0.27	U		0.27	U		68	U	
1,2,4-TRIMETHYLBENZENE		0.24	U		0.24	U		0.24	U		60	U	
1,2-DICHLOROETHANE		0.3	U		0.3	U		0.3	U		75	U	
1,3,5-TRIMETHYLBENZENE		0.24	U		0.24	U		0.24	U		60	U	
BENZENE		0.28	U		0.28	U		0.28	U		70	U	
CARBON TETRACHLORIDE		0.35	U		0.35	U		0.35	U		88	U	
CHLORODIFLUOROMETHANE		1	UJ	Q	1	UJ	Q	1	UJ	Q	250	UJ	Q
CHLOROFORM		0.31	U		0.31	U		0.31	U		78	U	
CIS-1,2-DICHLOROETHENE		0.3	U		0.3	U		0.47	J	P	76	J	P
DICHLORODIFLUOROMETHANE		0.5	U		0.5	U		0.5	U		130	U	
ETHYLBENZENE		0.26	U		0.26	U		0.26	U		65	U	
METHYL TERT-BUTYL ETHER		0.27	U		0.27	U		0.27	U		68	U	
METHYLENE CHLORIDE		0.53	U		0.53	U		0.53	U		130	U	
NAPHTHALENE		0.25	U		0.69	J	P	0.25	U		63	U	
TETRACHLOROETHENE		0.3	U		0.3	U		0.3	U		75	U	
TOLUENE		0.23	U		0.23	U		0.23	U		58	U	
TOTAL XYLENES		0.24	U		0.24	U		0.24	U		60	U	
TRANS-1,2-DICHLOROETHENE		0.29	U		0.29	U		0.29	U		73	U	
TRICHLOROETHENE		0.33	U		0.33	U		1.1			5100		
VINYL CHLORIDE		0.45	U		0.45	U		0.45	U		110	U	

PROJ_NO: 08109	NSAMPLE	WS-HRS6-A-030217			WS-HRS7-A-030217			WS-LS5-A-030217			WS-SD1-A-030217		
SDG: 240-76348-1	LAB_ID	240-76348-9			240-76348-10			240-76348-11			240-76348-1		
FRACTION: OV	SAMP_DATE	3/2/2017			3/2/2017			3/2/2017			3/2/2017		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.23	U		0.23	U		0.23	U		7.6		
1,1,2-TRICHLOROETHANE		0.34	U		0.34	U		0.34	U		0.34	U	
1,1-DICHLOROETHANE		0.25	U		0.99	J	P	0.25	U		0.26	J	P
1,1-DICHLOROETHENE		0.27	U		7.8			0.67	J	P	1		
1,2,3-TRIMETHYLBENZENE		0.22	U		0.22	U		0.22	U		0.22	U	
1,2,4-TRICHLOROBENZENE		0.27	U		0.27	U		0.27	U		0.27	U	
1,2,4-TRIMETHYLBENZENE		0.24	U		0.24	U		0.24	U		0.24	U	
1,2-DICHLOROETHANE		0.3	U		0.3	U		0.3	U		0.3	U	
1,3,5-TRIMETHYLBENZENE		0.24	U		0.24	U		0.24	U		0.24	U	
BENZENE		0.28	U		0.28	U		0.28	U		0.28	U	
CARBON TETRACHLORIDE		0.35	U		0.35	U		0.35	U		0.35	U	
CHLORODIFLUOROMETHANE		1	UJ	Q	1	UJ	Q	1	UJ	Q	1	UJ	Q
CHLOROFORM		0.31	U		2.5			10			0.55	J	P
CIS-1,2-DICHLOROETHENE		0.3	U		3			0.3	U		0.3	U	
DICHLORODIFLUOROMETHANE		0.5	U		0.5	U		0.5	U		0.5	UJ	C
ETHYLBENZENE		0.26	U		0.26	U		0.26	U		0.26	U	
METHYL TERT-BUTYL ETHER		0.27	U		0.27	U		0.27	U		0.27	U	
METHYLENE CHLORIDE		0.53	U		0.53	U		0.53	U		0.53	U	
NAPHTHALENE		0.25	U		0.25	U		0.25	U		0.25	U	
TETRACHLOROETHENE		0.3	U		0.3	U		0.3	U		0.3	U	
TOLUENE		0.23	U		0.23	U		1			0.23	U	
TOTAL XYLENES		0.24	U		0.24	U		0.24	U		0.24	U	
TRANS-1,2-DICHLOROETHENE		0.29	U		0.33	J	P	0.29	U		0.29	U	
TRICHLOROETHENE		14			41			2.6			0.7	J	P
VINYL CHLORIDE		0.45	U		0.45	U		0.45	U		0.45	U	

PROJ_NO: 08109	NSAMPLE	WS-SD2-A-030217			WS-SD3-A-030217			WS-SP1-A-030217			WS-SP1A-A-030317		
SDG: 240-76348-1	LAB_ID	240-76348-2			240-76348-3			240-76348-13			240-76348-14		
FRACTION: OV	SAMP_DATE	3/2/2017			3/2/2017			3/2/2017			3/3/2017		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.23	U		0.23	U		1.2	U		4.6	U	
1,1,2-TRICHLOROETHANE		0.34	U		0.34	U		1.7	U		6.8	U	
1,1-DICHLOROETHANE		0.25	U		0.25	U		5.7			5.1	J	P
1,1-DICHLOROETHENE		0.27	U		0.27	U		47			88		
1,2,3-TRIMETHYLBENZENE		0.22	U		0.22	U		1.1	U		4.4	U	
1,2,4-TRICHLOROBENZENE		0.27	U		0.27	U		1.4	U		5.4	U	
1,2,4-TRIMETHYLBENZENE		0.24	U		0.24	U		1.2	U		4.8	U	
1,2-DICHLOROETHANE		0.3	U		0.3	U		1.5	U		6	U	
1,3,5-TRIMETHYLBENZENE		0.24	U		0.24	U		1.2	U		4.8	U	
BENZENE		0.28	U		0.28	U		1.4	U		5.6	U	
CARBON TETRACHLORIDE		0.35	U		0.35	U		1.8	U		7	U	
CHLORODIFLUOROMETHANE		1	UJ	Q	1	UJ	Q	5	UJ	Q	20	UJ	Q
CHLOROFORM		0.31	U		0.31	U		5.6			6.2	U	
CIS-1,2-DICHLOROETHENE		0.3	U		0.3	U		13			32		
DICHLORODIFLUOROMETHANE		0.5	UJ	C	0.5	U		2.5	U		10	U	
ETHYLBENZENE		0.26	U		0.26	U		1.3	U		5.2	U	
METHYL TERT-BUTYL ETHER		0.27	U		0.27	U		1.4	U		5.4	U	
METHYLENE CHLORIDE		0.53	U		0.53	U		2.7	U		11	U	
NAPHTHALENE		0.25	U		0.25	U		1.3	U		5	U	
TETRACHLOROETHENE		0.3	U		0.3	U		1.5	U		6	U	
TOLUENE		0.23	U		0.23	U		1.2	U		4.6	U	
TOTAL XYLENES		0.24	U		0.24	U		1.2	U		4.8	U	
TRANS-1,2-DICHLOROETHENE		0.29	U		0.29	U		1.5	U		5.8	U	
TRICHLOROETHENE		0.33	U		0.33	U		160			440		
VINYL CHLORIDE		0.45	U		0.45	U		2.3	U		9	U	

PROJ_NO: 08109	NSAMPLE	WS-BRS-A-030317			WS-LS5-A-030217			WS-SD1-A-030217			WS-SD2-A-030217		
SDG: 240-76348-1	LAB_ID	240-76348-12			240-76348-11			240-76348-1			240-76348-2		
FRACTION: TICOV	SAMP_DATE	3/3/2017			3/2/2017			3/2/2017			3/2/2017		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DODECANE					54	NJ	Z1						
DODECANE, 2-METHYL-6-PROPYL-					30	NJ	Z1						
DODECANE, 3-METHYL-					39	NJ	Z1						
DODECANE, 4-METHYL-					29	NJ	Z1						
FORMAMIDE, N-METHYLTHIO								1.1	NJ	Z1			
TETRADECANE		2	NJ	Z1	58	NJ	Z1						
TRIDECANE		3.9	NJ	Z1	110	NJ	Z1						
TRIDECANE, 2-METHYL-					21	NJ	Z1						
UNDECANE, 2,4-DIMETHYL-					39	NJ	Z1						
UNKNOWN [1.81]											1.2	NJ	Z1
UNKNOWN [13.32]					31	NJ	Z1						

Appendix B

Results as Reported by the Laboratory

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SD1-A-030217 | Lab Sample ID: 240-76348-1

Matrix: Water | Lab File ID: UXJ0704.D

Analysis Method: 8260C | Date Collected: 03/02/2017 10:50

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:20

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269880 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	7.6		1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	0.26	J	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0		1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	0.55	J	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	0.70	J	1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	87		73-124
1868-53-7	Dibromofluoromethane (Surr)	86		80-120
460-00-4	4-Bromofluorobenzene (Surr)	80		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	80		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SD1-A-030217 | Lab Sample ID: 240-76348-1

Matrix: Water | Lab File ID: UXJ0704.D

Analysis Method: 8260C | Date Collected: 03/02/2017 10:50

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:20

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269880 | Units: ug/L

Number TICs Found: 1 | TIC Result Total: 1.1

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
1000196-87-7	Formamide, N-methylthio	3.99	1.1	T J N	78%

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SD1-A-030217 | Lab Sample ID: 240-76348-1

Matrix: Water | Lab File ID: UXJ0704.D

Analysis Method: 8260C | Date Collected: 03/02/2017 10:50

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:20

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269880 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SD2-A-030217 | Lab Sample ID: 240-76348-2

Matrix: Water | Lab File ID: UXJ0705.D

Analysis Method: 8260C | Date Collected: 03/02/2017 14:45

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:43

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269880 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0	U	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	1.0	U	1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	85		73-124
1868-53-7	Dibromofluoromethane (Surr)	86		80-120
460-00-4	4-Bromofluorobenzene (Surr)	79		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	81		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SD2-A-030217 | Lab Sample ID: 240-76348-2

Matrix: Water | Lab File ID: UXJ0705.D

Analysis Method: 8260C | Date Collected: 03/02/2017 14:45

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:43

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269880 | Units: ug/L

Number TICs Found: 1 | TIC Result Total: 1.2

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Unknown	1.81	1.2	T J	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SD2-A-030217 | Lab Sample ID: 240-76348-2

Matrix: Water | Lab File ID: UXJ0705.D

Analysis Method: 8260C | Date Collected: 03/02/2017 14:45

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:43

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269880 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SD3-A-030217 | Lab Sample ID: 240-76348-3

Matrix: Water | Lab File ID: UXM1089.D

Analysis Method: 8260C | Date Collected: 03/02/2017 15:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 16:45

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0	U	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	1.0	U	1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	101		73-124
1868-53-7	Dibromofluoromethane (Surr)	102		80-120
460-00-4	4-Bromofluorobenzene (Surr)	107		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	96		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SD3-A-030217 | Lab Sample ID: 240-76348-3

Matrix: Water | Lab File ID: UXM1089.D

Analysis Method: 8260C | Date Collected: 03/02/2017 15:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 16:45

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SD3-A-030217 | Lab Sample ID: 240-76348-3

Matrix: Water | Lab File ID: UXM1089.D

Analysis Method: 8260C | Date Collected: 03/02/2017 15:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 16:45

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS1-A-030217 | Lab Sample ID: 240-76348-4

Matrix: Water | Lab File ID: UXM1090.D

Analysis Method: 8260C | Date Collected: 03/02/2017 13:45

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 17:07

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0	U	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	1.0	U	1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	101		73-124
1868-53-7	Dibromofluoromethane (Surr)	101		80-120
460-00-4	4-Bromofluorobenzene (Surr)	107		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	97		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS1-A-030217 | Lab Sample ID: 240-76348-4

Matrix: Water | Lab File ID: UXM1090.D

Analysis Method: 8260C | Date Collected: 03/02/2017 13:45

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 17:07

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS1-A-030217 | Lab Sample ID: 240-76348-4

Matrix: Water | Lab File ID: UXM1090.D

Analysis Method: 8260C | Date Collected: 03/02/2017 13:45

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 17:07

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS2-A-030217 | Lab Sample ID: 240-76348-5

Matrix: Water | Lab File ID: UXM1091.D

Analysis Method: 8260C | Date Collected: 03/02/2017 14:05

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 17:30

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0	U	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	1.0	U	1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	102		73-124
1868-53-7	Dibromofluoromethane (Surr)	104		80-120
460-00-4	4-Bromofluorobenzene (Surr)	108		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	99		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS2-A-030217 | Lab Sample ID: 240-76348-5

Matrix: Water | Lab File ID: UXM1091.D

Analysis Method: 8260C | Date Collected: 03/02/2017 14:05

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 17:30

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS2-A-030217 | Lab Sample ID: 240-76348-5

Matrix: Water | Lab File ID: UXM1091.D

Analysis Method: 8260C | Date Collected: 03/02/2017 14:05

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 17:30

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS3-A-030217 | Lab Sample ID: 240-76348-6

Matrix: Water | Lab File ID: UXM1092.D

Analysis Method: 8260C | Date Collected: 03/02/2017 13:30

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 17:53

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0	U	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	0.69	J	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	1.0	U	1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	99		73-124
1868-53-7	Dibromofluoromethane (Surr)	102		80-120
460-00-4	4-Bromofluorobenzene (Surr)	107		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	99		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS3-A-030217 | Lab Sample ID: 240-76348-6

Matrix: Water | Lab File ID: UXM1092.D

Analysis Method: 8260C | Date Collected: 03/02/2017 13:30

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 17:53

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS3-A-030217 | Lab Sample ID: 240-76348-6

Matrix: Water | Lab File ID: UXM1092.D

Analysis Method: 8260C | Date Collected: 03/02/2017 13:30

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 17:53

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS4-A-030217 | Lab Sample ID: 240-76348-7

Matrix: Water | Lab File ID: UXM1093.D

Analysis Method: 8260C | Date Collected: 03/02/2017 14:20

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 18:16

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	0.99	J	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	0.47	J	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	1.1		1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	100		73-124
1868-53-7	Dibromofluoromethane (Surr)	102		80-120
460-00-4	4-Bromofluorobenzene (Surr)	100		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	100		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS4-A-030217 | Lab Sample ID: 240-76348-7

Matrix: Water | Lab File ID: UXM1093.D

Analysis Method: 8260C | Date Collected: 03/02/2017 14:20

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 18:16

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS4-A-030217 | Lab Sample ID: 240-76348-7

Matrix: Water | Lab File ID: UXM1093.D

Analysis Method: 8260C | Date Collected: 03/02/2017 14:20

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 18:16

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS5-A-030217 | Lab Sample ID: 240-76348-8

Matrix: Water | Lab File ID: UXM1094.D

Analysis Method: 8260C | Date Collected: 03/02/2017 11:40

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 18:39

Soil Aliquot Vol: | Dilution Factor: 250

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	250	U	250	58
79-00-5	1,1,2-Trichloroethane	250	U	250	85
75-34-3	1,1-Dichloroethane	250	U	250	63
75-35-4	1,1-Dichloroethene	390		250	68
526-73-8	1,2,3-Trimethylbenzene	1300	U	1300	55
120-82-1	1,2,4-Trichlorobenzene	250	U	250	68
95-63-6	1,2,4-Trimethylbenzene	250	U	250	60
107-06-2	1,2-Dichloroethane	250	U	250	75
108-67-8	1,3,5-Trimethylbenzene	250	U	250	60
71-43-2	Benzene	250	U	250	70
56-23-5	Carbon tetrachloride	250	U	250	88
67-66-3	Chloroform	250	U	250	78
156-59-2	cis-1,2-Dichloroethene	76	J	250	75
75-71-8	Dichlorodifluoromethane	250	U	250	130
100-41-4	Ethylbenzene	250	U	250	65
1634-04-4	Methyl tert-butyl ether	250	U	250	68
75-09-2	Methylene Chloride	250	U	250	130
91-20-3	Naphthalene	250	U	250	63
127-18-4	Tetrachloroethene	250	U	250	75
108-88-3	Toluene	250	U	250	58
156-60-5	trans-1,2-Dichloroethene	250	U	250	73
79-01-6	Trichloroethene	5100		250	83
75-01-4	Vinyl chloride	250	U	250	110
1330-20-7	Xylenes, Total	500	U	500	60

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	101		73-124
1868-53-7	Dibromofluoromethane (Surr)	103		80-120
460-00-4	4-Bromofluorobenzene (Surr)	110		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	98		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS5-A-030217 | Lab Sample ID: 240-76348-8

Matrix: Water | Lab File ID: UXM1094.D

Analysis Method: 8260C | Date Collected: 03/02/2017 11:40

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 18:39

Soil Aliquot Vol: | Dilution Factor: 250

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS5-A-030217 | Lab Sample ID: 240-76348-8

Matrix: Water | Lab File ID: UXM1094.D

Analysis Method: 8260C | Date Collected: 03/02/2017 11:40

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 18:39

Soil Aliquot Vol: | Dilution Factor: 250

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		250	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS6-A-030217 | Lab Sample ID: 240-76348-9

Matrix: Water | Lab File ID: UXM1095.D

Analysis Method: 8260C | Date Collected: 03/02/2017 11:30

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 19:02

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0	U	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	14		1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	95		73-124
1868-53-7	Dibromofluoromethane (Surr)	99		80-120
460-00-4	4-Bromofluorobenzene (Surr)	107		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	98		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS6-A-030217 Lab Sample ID: 240-76348-9

Matrix: Water Lab File ID: UXM1095.D

Analysis Method: 8260C Date Collected: 03/02/2017 11:30

Sample wt/vol: 5(mL) Date Analyzed: 03/09/2017 19:02

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-624 ID: 0.18(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 269898 Units: ug/L

Number TICs Found: 0 TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I-TIC 8260C

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS6-A-030217 | Lab Sample ID: 240-76348-9

Matrix: Water | Lab File ID: UXM1095.D

Analysis Method: 8260C | Date Collected: 03/02/2017 11:30

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 19:02

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS7-A-030217 | Lab Sample ID: 240-76348-10

Matrix: Water | Lab File ID: UXM1096.D

Analysis Method: 8260C | Date Collected: 03/02/2017 11:24

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 19:25

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	0.99	J	1.0	0.25
75-35-4	1,1-Dichloroethene	7.8		1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	2.5		1.0	0.31
156-59-2	cis-1,2-Dichloroethene	3.0		1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	0.33	J	1.0	0.29
79-01-6	Trichloroethene	41		1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	99		73-124
1868-53-7	Dibromofluoromethane (Surr)	98		80-120
460-00-4	4-Bromofluorobenzene (Surr)	101		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	96		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS7-A-030217 | Lab Sample ID: 240-76348-10

Matrix: Water | Lab File ID: UXM1096.D

Analysis Method: 8260C | Date Collected: 03/02/2017 11:24

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 19:25

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-HRS7-A-030217 | Lab Sample ID: 240-76348-10

Matrix: Water | Lab File ID: UXM1096.D

Analysis Method: 8260C | Date Collected: 03/02/2017 11:24

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 19:25

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-LS5-A-030217 | Lab Sample ID: 240-76348-11

Matrix: Water | Lab File ID: UXM1097.D

Analysis Method: 8260C | Date Collected: 03/02/2017 12:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 19:48

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	0.67	J	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	10		1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0		1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	2.6		1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	100		73-124
1868-53-7	Dibromofluoromethane (Surr)	102		80-120
460-00-4	4-Bromofluorobenzene (Surr)	108		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	97		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-LS5-A-030217 | Lab Sample ID: 240-76348-11

Matrix: Water | Lab File ID: UXM1097.D

Analysis Method: 8260C | Date Collected: 03/02/2017 12:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 19:48

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 10 | TIC Result Total: 432

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
112-40-3	Dodecane	11.73	54	T J N	96%
17312-80-0	Undecane, 2,4-dimethyl-	12.30	39	T J N	86%
6117-97-1	Dodecane, 4-methyl-	12.35	29	T J N	93%
55045-08-4	Dodecane, 2-methyl-6-propyl-	12.40	30	T J N	83%
17312-57-1	Dodecane, 3-methyl-	12.48	39	T J N	90%
629-50-5	Tridecane	12.75	110	T J N	96%
629-59-4	Tetradecane	12.88	58	T J N	58%
	Unknown	13.32	31	T J	
1560-96-9	Tridecane, 2-methyl-	13.44	21	T J N	78%
629-59-4	Tetradecane	13.87	21	T J N	94%

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-LS5-A-030217 | Lab Sample ID: 240-76348-11

Matrix: Water | Lab File ID: UXM1097.D

Analysis Method: 8260C | Date Collected: 03/02/2017 12:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 19:48

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-BRS-A-030317 | Lab Sample ID: 240-76348-12

Matrix: Water | Lab File ID: UXM1098.D

Analysis Method: 8260C | Date Collected: 03/03/2017 10:20

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:11

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0	U	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	1.0	U	1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	102		73-124
1868-53-7	Dibromofluoromethane (Surr)	98		80-120
460-00-4	4-Bromofluorobenzene (Surr)	108		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	98		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-BRS-A-030317 | Lab Sample ID: 240-76348-12

Matrix: Water | Lab File ID: UXM1098.D

Analysis Method: 8260C | Date Collected: 03/03/2017 10:20

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:11

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 2 | TIC Result Total: 5.9

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
629-50-5	Tridecane	12.75	3.9	T J N	96%
629-59-4	Tetradecane	13.87	2.0	T J N	96%

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-BRS-A-030317 | Lab Sample ID: 240-76348-12

Matrix: Water | Lab File ID: UXM1098.D

Analysis Method: 8260C | Date Collected: 03/03/2017 10:20

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:11

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SP1-A-030217 | Lab Sample ID: 240-76348-13

Matrix: Water | Lab File ID: UXM1099.D

Analysis Method: 8260C | Date Collected: 03/02/2017 11:04

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:35

Soil Aliquot Vol: | Dilution Factor: 5

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	5.0	U	5.0	1.2
79-00-5	1,1,2-Trichloroethane	5.0	U	5.0	1.7
75-34-3	1,1-Dichloroethane	5.7		5.0	1.3
75-35-4	1,1-Dichloroethene	47		5.0	1.4
526-73-8	1,2,3-Trimethylbenzene	25	U	25	1.1
120-82-1	1,2,4-Trichlorobenzene	5.0	U	5.0	1.4
95-63-6	1,2,4-Trimethylbenzene	5.0	U	5.0	1.2
107-06-2	1,2-Dichloroethane	5.0	U	5.0	1.5
108-67-8	1,3,5-Trimethylbenzene	5.0	U	5.0	1.2
71-43-2	Benzene	5.0	U	5.0	1.4
56-23-5	Carbon tetrachloride	5.0	U	5.0	1.8
67-66-3	Chloroform	5.6		5.0	1.6
156-59-2	cis-1,2-Dichloroethene	13		5.0	1.5
75-71-8	Dichlorodifluoromethane	5.0	U	5.0	2.5
100-41-4	Ethylbenzene	5.0	U	5.0	1.3
1634-04-4	Methyl tert-butyl ether	5.0	U	5.0	1.4
75-09-2	Methylene Chloride	5.0	U	5.0	2.7
91-20-3	Naphthalene	5.0	U	5.0	1.3
127-18-4	Tetrachloroethene	5.0	U	5.0	1.5
108-88-3	Toluene	5.0	U	5.0	1.2
156-60-5	trans-1,2-Dichloroethene	5.0	U	5.0	1.5
79-01-6	Trichloroethene	160		5.0	1.7
75-01-4	Vinyl chloride	5.0	U	5.0	2.3
1330-20-7	Xylenes, Total	10	U	10	1.2

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	100		73-124
1868-53-7	Dibromofluoromethane (Surr)	101		80-120
460-00-4	4-Bromofluorobenzene (Surr)	106		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	99		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SP1-A-030217 | Lab Sample ID: 240-76348-13

Matrix: Water | Lab File ID: UXM1099.D

Analysis Method: 8260C | Date Collected: 03/02/2017 11:04

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:35

Soil Aliquot Vol: | Dilution Factor: 5

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SP1-A-030217 | Lab Sample ID: 240-76348-13

Matrix: Water | Lab File ID: UXM1099.D

Analysis Method: 8260C | Date Collected: 03/02/2017 11:04

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:35

Soil Aliquot Vol: | Dilution Factor: 5

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		5.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SP1A-A-030317 | Lab Sample ID: 240-76348-14

Matrix: Water | Lab File ID: UXM1100.D

Analysis Method: 8260C | Date Collected: 03/03/2017 10:45

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:58

Soil Aliquot Vol: | Dilution Factor: 20

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	20	U	20	4.6
79-00-5	1,1,2-Trichloroethane	20	U	20	6.8
75-34-3	1,1-Dichloroethane	5.1	J	20	5.0
75-35-4	1,1-Dichloroethene	88		20	5.4
526-73-8	1,2,3-Trimethylbenzene	100	U	100	4.4
120-82-1	1,2,4-Trichlorobenzene	20	U	20	5.4
95-63-6	1,2,4-Trimethylbenzene	20	U	20	4.8
107-06-2	1,2-Dichloroethane	20	U	20	6.0
108-67-8	1,3,5-Trimethylbenzene	20	U	20	4.8
71-43-2	Benzene	20	U	20	5.6
56-23-5	Carbon tetrachloride	20	U	20	7.0
67-66-3	Chloroform	20	U	20	6.2
156-59-2	cis-1,2-Dichloroethene	32		20	6.0
75-71-8	Dichlorodifluoromethane	20	U	20	10
100-41-4	Ethylbenzene	20	U	20	5.2
1634-04-4	Methyl tert-butyl ether	20	U	20	5.4
75-09-2	Methylene Chloride	20	U	20	11
91-20-3	Naphthalene	20	U	20	5.0
127-18-4	Tetrachloroethene	20	U	20	6.0
108-88-3	Toluene	20	U	20	4.6
156-60-5	trans-1,2-Dichloroethene	20	U	20	5.8
79-01-6	Trichloroethene	440		20	6.6
75-01-4	Vinyl chloride	20	U	20	9.0
1330-20-7	Xylenes, Total	40	U	40	4.8

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	104		73-124
1868-53-7	Dibromofluoromethane (Surr)	101		80-120
460-00-4	4-Bromofluorobenzene (Surr)	106		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	98		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SP1A-A-030317 | Lab Sample ID: 240-76348-14

Matrix: Water | Lab File ID: UXM1100.D

Analysis Method: 8260C | Date Collected: 03/03/2017 10:45

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:58

Soil Aliquot Vol: | Dilution Factor: 20

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-SP1A-A-030317 | Lab Sample ID: 240-76348-14

Matrix: Water | Lab File ID: UXM1100.D

Analysis Method: 8260C | Date Collected: 03/03/2017 10:45

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 20:58

Soil Aliquot Vol: | Dilution Factor: 20

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		20	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-ELS-A-030317 | Lab Sample ID: 240-76348-15

Matrix: Water | Lab File ID: UXM1101.D

Analysis Method: 8260C | Date Collected: 03/03/2017 11:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 21:21

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0	U	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	1.0	U	1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	98		73-124
1868-53-7	Dibromofluoromethane (Surr)	97		80-120
460-00-4	4-Bromofluorobenzene (Surr)	106		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	94		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-ELS-A-030317 | Lab Sample ID: 240-76348-15

Matrix: Water | Lab File ID: UXM1101.D

Analysis Method: 8260C | Date Collected: 03/03/2017 11:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 21:21

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: WS-ELS-A-030317 | Lab Sample ID: 240-76348-15

Matrix: Water | Lab File ID: UXM1101.D

Analysis Method: 8260C | Date Collected: 03/03/2017 11:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 21:21

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: TB-030317 | Lab Sample ID: 240-76348-16

Matrix: Water | Lab File ID: UXM1102.D

Analysis Method: 8260C | Date Collected: 03/03/2017 00:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 21:44

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0	U	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	1.0	U	1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	99		73-124
1868-53-7	Dibromofluoromethane (Surr)	100		80-120
460-00-4	4-Bromofluorobenzene (Surr)	103		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	99		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: TB-030317 | Lab Sample ID: 240-76348-16

Matrix: Water | Lab File ID: UXM1102.D

Analysis Method: 8260C | Date Collected: 03/03/2017 00:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 21:44

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I-TIC 8260C

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: TB-030317 | Lab Sample ID: 240-76348-16

Matrix: Water | Lab File ID: UXM1102.D

Analysis Method: 8260C | Date Collected: 03/03/2017 00:00

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 21:44

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

Appendix C

Support Documentation

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 240-76348-1

Job Description: Building A Basement

For:
Tetra Tech, Inc.
Foster Plaza 7
661 Anderson Drive
Pittsburgh, PA 15220-2745

Attention: Chris Pike

Approved for release.
John McFadden
Project Manager I
3/14/2017 11:47 AM

John McFadden, Project Manager I
4101 Shuffel Street NW, North Canton, OH, 44720
john.mcfadden@testamericainc.com
03/14/2017

cc: Tony Apanavage
Samantha Brenner
Mike Martin
Final Data Tracking

CASE NARRATIVE

Client: Tetra Tech, Inc.

Project: Building A Basement

Report Number: 240-76348-1

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 Canton 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.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 3/7/2017 10:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.5º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples WS-SD1-A-030217 (240-76348-1), WS-SD2-A-030217 (240-76348-2), WS-SD3-A-030217 (240-76348-3), WS-HRS1-A-030217 (240-76348-4), WS-HRS2-A-030217 (240-76348-5), WS-HRS3-A-030217 (240-76348-6), WS-HRS4-A-030217 (240-76348-7), WS-HRS5-A-030217 (240-76348-8), WS-HRS6-A-030217 (240-76348-9), WS-HRS7-A-030217 (240-76348-10), WS-LS5-A-030217 (240-76348-11), WS-BRS-A-030317 (240-76348-12), WS-SP1-A-030217 (240-76348-13), WS-SP1A-A-030317 (240-76348-14), WS-ELS-A-030317 (240-76348-15) and TB-030317 (240-76348-16) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 03/09/2017.

Samples WS-HRS5-A-030217 (240-76348-8)[250X], WS-SP1-A-030217 (240-76348-13)[5X] and WS-SP1A-A-030317 (240-76348-14) [20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The continuing calibration verification (CCV) associated with batch 240-269880 recovered above the upper control limit for Dichlorodifluoromethane. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The following samples are impacted: WS-SD1-A-030217 (240-76348-1) and WS-SD2-A-030217 (240-76348-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

1.8.1.5

180325

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: BALTIMORE

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: TETRA TECH	Client Project Manager: T. APANAVAGE	Site Contact: T. APANAVAGE	Lab Contact: J. McFADDEN	COC No: 060275
Address: 20251 CENTURY BLVD STE 200	Telephone: 3012338230	Telephone: 3012338230	Telephone:	1 of 2 COCs
City/State/Zip: GERMANTOWN, MD 20874	Email: tony.apanavage@tetratech.com	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 301 233 8230		TAT if different from below: STANDARD TAT ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: BUILDING A BASEMENT	Method of Shipment/Carrier:			Job/SDG No:
Project Number: 112IC08109	Shipping/Tracking No:			
PO#				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y/N)	Composite=C/Grab=G	VOCs	Sample Specific Notes / Special Instructions:
WS-SD1-A-030217	3/2/17	1050		✓													X	
WS-SD2-A-030217	3/2/17	1445		✓													X	
WS-SD3-A-030217	3/2/17	1500		✓													X	
WS-HRS1-A-030217	3/2/17	1345		✓													X	RT: 1.0°C CT: 1.0°C
WS-HRS2-A-030217	3/2/17	1405		✓													X	No Custody Seal
WS-HRS3-A-030217	3/2/17	1330		✓													X	1 Cooler, FedEx PO
WS-HRS4-A-030217	3/2/17	1420		✓													X	#+K# 7785 7191 4786
WS-HRS5-A-030217	3/2/17	1140		✓													X	KW 3/4/17
WS-HRS6-A-030217	3/2/17	1130		✓													X	
WS-HRS7-A-030217	3/2/17	1124		✓													X	

240-76348 Chain of Custody

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

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

Special Instructions/QC Requirements & Comments:

	Company	Date/Time		Company	Date/Time
Relinquished by:	TETRA TECH	3/3/17	Received by: (RELINQUISHED BY)	TA KNOX	3.6.17 1330
Relinquished by:	TA	3/3/17 1857	Received by: POP	TAL	3-7-17 1045
Relinquished by:	TA	3/3/17 2355	Received in Laboratory by:	TA	3/4/17 0915

TAL 0018- 1 (04/10)

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

180325

TestAmerica Laboratory location: _____

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other _____

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: TETRA TECH	Client Project Manager: T. APANAVAGE	Site Contact: T. APANAVAGE	Lab Contact: J. McFADDEN	COC No: 060273
Address: 20251 CENTURY BLVD STE 200	Telephone: 3012338230	Telephone: 3012338230	Telephone:	2 of 2 COCs
City/State/Zip: GERMANTOWN, MD 20874	Email: tony.apanavage@tetratech.com	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 301 233 8230		TAT if different from below _____		☐ Walk-in client
Project Name: BUILDING A BASEMENT	Method of Shipment/Carrier:	STANDARD TAT ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		☐ Lab pickup ☐ Lab sampling
Project Number: 112IC08109	Shipping/Tracking No:			Job/SDG No:
PO #				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	VOCs	Sample Specific Notes / Special Instructions:
WS-LSS-A-030217	3/2/17	1200		✓						✓							X	
WS-BRS-A-030317	3/3/17	1020		✓						✓							X	
WS-SP1-A-030217	3/2/17	1104		✓						✓							X	
WS-FD1-A-030317	3/3/17	1045		✓						✓							X	
WS-ELS-A-030317	3/3/17	1100		✓						✓							X	
TB-030317	3/3/17	—		✓						✓							X	

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

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

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	TETRA TECH	3/3/17		TA KNOX	3-6-17 13:30
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	TA	3/3/17 1657		TAL	3-7-17 1045
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
	TA	3/3/17 2058		TA	3/4/17 0915

TAL 0018- 1 (04/10)

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 410348**
Canton Facility

Client TETRA TECH Site Name —
Cooler Received on 3-7-17 Opened on 3-7-17
FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Cooler unpacked by: POP

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
IR GUN# IR-8 (CF **-0.3** °C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.5 °C
IR GUN #36 (CF **+0.3**°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
-Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
-Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
If yes, Questions 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC682547**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # COVERED Yes No
15. Was a LL Hg or Me Hg trip blank present? Yes No
Contacted PM Date by via Verbal Voice Mail Other

Concerning

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

BY PROCESS OF ELIMINATION, UNLABELED VIALS ARE TRIP BLANKS (4)

15. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

FORM II
GC/MS VOA SURROGATE RECOVERY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): DB-624 ID: 0.18(mm)

Client Sample ID	Lab Sample ID	DBFM #	DCA #	TOL #	BFB #
WS-SD1-A-030217	240-76348-1	86	80	87	80
WS-SD2-A-030217	240-76348-2	86	81	85	79
WS-SD3-A-030217	240-76348-3	102	96	101	107
WS-HRS1-A-030217	240-76348-4	101	97	101	107
WS-HRS2-A-030217	240-76348-5	104	99	102	108
WS-HRS3-A-030217	240-76348-6	102	99	99	107
WS-HRS4-A-030217	240-76348-7	102	100	100	100
WS-HRS5-A-030217	240-76348-8	103	98	101	110
WS-HRS6-A-030217	240-76348-9	99	98	95	107
WS-HRS7-A-030217	240-76348-10	98	96	99	101
WS-LS5-A-030217	240-76348-11	102	97	100	108
WS-BRS-A-030317	240-76348-12	98	98	102	108
WS-SP1-A-030217	240-76348-13	101	99	100	106
WS-SP1A-A-030317	240-76348-14	101	98	104	106
WS-ELS-A-030317	240-76348-15	97	94	98	106
TB-030317	240-76348-16	100	99	99	103
	MB 240-269880/6	89	84	88	85
	MB 240-269898/8	101	101	99	105
	LCS 240-269880/4	88	87	89	86
	LCS 240-269898/5	99	94	99	102
WS-SP1A-A-030317 MS	240-76348-14 MS	101	95	102	103
	200-37604-B-2 MS	87	86	87	83
WS-SP1A-A-030317 MSD	240-76348-14 MSD	98	95	102	105
	200-37604-B-2 MSD	86	87	87	84

	QC LIMITS
DBFM = Dibromofluoromethane (Surr)	80-120
DCA = 1,2-Dichloroethane-d4 (Surr)	63-132
TOL = Toluene-d8 (Surr)	73-124
BFB = 4-Bromofluorobenzene (Surr)	73-120

Column to be used to flag recovery values

FORM II 8260C

FORM III
GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Matrix: Water Level: Low Lab File ID: UXJ0681.D

Lab ID: LCS 240-269880/4 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
1,1,1-Trichloroethane	10.0	10.0	100	79-133	
1,1,2-Trichloroethane	10.0	10.5	105	80-120	
1,1-Dichloroethane	10.0	10.1	101	77-121	
1,1-Dichloroethene	10.0	9.51	95	70-141	
1,2,4-Trichlorobenzene	10.0	10.0	100	53-137	
1,2,4-Trimethylbenzene	10.0	9.90	99	77-120	
1,2-Dichloroethane	10.0	9.84	98	76-130	
1,3,5-Trimethylbenzene	10.0	10.1	101	76-120	
Benzene	10.0	10.2	102	80-120	
Carbon tetrachloride	10.0	11.3	113	69-149	
Chloroform	10.0	9.88	99	80-120	
cis-1,2-Dichloroethene	10.0	9.92	99	80-120	
Dichlorodifluoromethane	10.0	6.98	70	32-140	
Ethylbenzene	10.0	9.92	99	80-120	
Methyl tert-butyl ether	10.0	10.6	106	75-126	
Methylene Chloride	10.0	9.08	91	68-136	
m-Xylene & p-Xylene	10.0	9.96	100	80-120	
Naphthalene	10.0	10.3	103	39-148	
o-Xylene	10.0	9.91	99	80-120	
Tetrachloroethene	10.0	9.79	98	80-123	
Toluene	10.0	10.1	101	80-121	
trans-1,2-Dichloroethene	10.0	10.1	101	80-123	
Trichloroethene	10.0	9.98	100	80-122	
Vinyl chloride	10.0	8.24	82	60-129	
Xylenes, Total	20.0	19.9	99	80-120	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Matrix: Water Level: Low Lab File ID: UXM1085.D

Lab ID: LCS 240-269898/5 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
1,1,1-Trichloroethane	20.0	20.3	101	79-133	
1,1,2-Trichloroethane	20.0	18.5	92	80-120	
1,1-Dichloroethane	20.0	20.1	100	77-121	
1,1-Dichloroethene	20.0	19.5	97	70-141	
1,2,4-Trichlorobenzene	20.0	18.6	93	53-137	
1,2,4-Trimethylbenzene	20.0	19.4	97	77-120	
1,2-Dichloroethane	20.0	18.1	91	76-130	
1,3,5-Trimethylbenzene	20.0	19.6	98	76-120	
Benzene	20.0	19.6	98	80-120	
Carbon tetrachloride	20.0	20.8	104	69-149	
Chloroform	20.0	19.7	98	80-120	
cis-1,2-Dichloroethene	20.0	19.7	98	80-120	
Dichlorodifluoromethane	20.0	19.9	100	32-140	
Ethylbenzene	20.0	19.1	96	80-120	
Methyl tert-butyl ether	20.0	19.5	98	75-126	
Methylene Chloride	20.0	19.1	96	68-136	
m-Xylene & p-Xylene	20.0	19.2	96	80-120	
Naphthalene	20.0	17.7	89	39-148	
o-Xylene	20.0	19.2	96	80-120	
Tetrachloroethene	20.0	18.1	91	80-123	
Toluene	20.0	19.2	96	80-121	
trans-1,2-Dichloroethene	20.0	19.4	97	80-123	
Trichloroethene	20.0	18.5	92	80-122	
Vinyl chloride	20.0	19.9	99	60-129	
Xylenes, Total	40.0	38.4	96	80-120	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Matrix: Water Level: Low Lab File ID: UXM1103.D

Lab ID: 240-76348-14 MS Client ID: WS-SP1A-A-030317 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
1,1,1-Trichloroethane	400	20 U	373	93	55-150	
1,1,2-Trichloroethane	400	20 U	397	99	65-130	
1,1-Dichloroethane	400	5.1 J	398	98	57-135	
1,1-Dichloroethene	400	88	454	91	50-156	
1,2,4-Trichlorobenzene	400	20 U	379	95	35-140	
1,2,4-Trimethylbenzene	400	20 U	373	93	54-128	
1,2-Dichloroethane	400	20 U	377	94	62-137	
1,3,5-Trimethylbenzene	400	20 U	382	95	53-130	
Benzene	400	20 U	395	99	67-126	
Carbon tetrachloride	400	20 U	378	95	51-154	
Chloroform	400	20 U	392	98	67-133	
cis-1,2-Dichloroethene	400	32	420	97	64-134	
Dichlorodifluoromethane	400	20 U	382	95	16-140	
Ethylbenzene	400	20 U	375	94	66-123	
Methyl tert-butyl ether	400	20 U	390	98	50-137	
Methylene Chloride	400	20 U	366	91	48-138	
m-Xylene & p-Xylene	400	40 U	367	92	58-127	
Naphthalene	400	20 U	374	94	28-150	
o-Xylene	400	20 U	381	95	61-126	
Tetrachloroethene	400	20 U	363	91	54-138	
Toluene	400	20 U	382	96	63-130	
trans-1,2-Dichloroethene	400	20 U	369	92	70-137	
Trichloroethene	400	440	813	94	58-139	
Vinyl chloride	400	20 U	383	96	38-147	
Xylenes, Total	800	40 U	748	94	60-126	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Matrix: Water Level: Low Lab File ID: UXJ0706.D

Lab ID: 200-37604-B-2 MS Client ID:

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
1,1,1-Trichloroethane	100	10 U	78.1	78	55-150	
1,1,2-Trichloroethane	100	10 U	90.4	90	65-130	
1,1-Dichloroethane	100	10 U	84.0	84	57-135	
1,1-Dichloroethene	100	10 U	77.2	77	50-156	
1,2,4-Trichlorobenzene	100	10 U	77.3	77	35-140	
1,2,4-Trimethylbenzene	100	10 U	74.7	75	54-128	
1,2-Dichloroethane	100	10 U	85.1	85	62-137	
1,3,5-Trimethylbenzene	100	10 U	73.7	74	53-130	
Benzene	100	10 U	84.2	84	67-126	
Carbon tetrachloride	100	10 U	79.8	80	51-154	
Chloroform	100	10 U	86.2	86	67-133	
cis-1,2-Dichloroethene	100	12	96.4	84	64-134	
Dichlorodifluoromethane	100	10 U	82.2	82	16-140	
Ethylbenzene	100	10 U	73.9	74	66-123	
Methyl tert-butyl ether	100	10 U	94.5	95	50-137	
Methylene Chloride	100	10 U	80.1	80	48-138	
m-Xylene & p-Xylene	100	20 U	74.5	74	58-127	
Naphthalene	100	10 U	87.1	87	28-150	
o-Xylene	100	10 U	76.3	76	61-126	
Tetrachloroethene	100	190	236	46	54-138	F1
Toluene	100	10 U	77.2	77	63-130	
trans-1,2-Dichloroethene	100	10 U	85.8	86	70-137	
Trichloroethene	100	4.7 J	84.1	79	58-139	
Vinyl chloride	100	10 U	92.3	92	38-147	
Xylenes, Total	200	20 U	151	75	60-126	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Matrix: Water Level: Low Lab File ID: UXM1104.D

Lab ID: 240-76348-14 MSD Client ID: WS-SP1A-A-030317 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
1,1,1-Trichloroethane	400	369	92	1	35	55-150	
1,1,2-Trichloroethane	400	392	98	1	35	65-130	
1,1-Dichloroethane	400	388	96	3	35	57-135	
1,1-Dichloroethene	400	452	91	0	35	50-156	
1,2,4-Trichlorobenzene	400	378	94	0	35	35-140	
1,2,4-Trimethylbenzene	400	372	93	0	35	54-128	
1,2-Dichloroethane	400	352	88	7	35	62-137	
1,3,5-Trimethylbenzene	400	379	95	1	35	53-130	
Benzene	400	382	95	3	31	67-126	
Carbon tetrachloride	400	384	96	1	35	51-154	
Chloroform	400	374	94	5	35	67-133	
cis-1,2-Dichloroethene	400	401	92	5	35	64-134	
Dichlorodifluoromethane	400	407	102	6	35	16-140	
Ethylbenzene	400	372	93	1	34	66-123	
Methyl tert-butyl ether	400	378	94	3	35	50-137	
Methylene Chloride	400	354	89	3	35	48-138	
m-Xylene & p-Xylene	400	362	90	2	35	58-127	
Naphthalene	400	391	98	4	35	28-150	
o-Xylene	400	370	92	3	35	61-126	
Tetrachloroethene	400	366	92	1	35	54-138	
Toluene	400	384	96	1	33	63-130	
trans-1,2-Dichloroethene	400	356	89	4	25	70-137	
Trichloroethene	400	782	86	4	35	58-139	
Vinyl chloride	400	381	95	0	35	38-147	
Xylenes, Total	800	732	92	2	35	60-126	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Matrix: Water Level: Low Lab File ID: UXJ0707.D

Lab ID: 200-37604-B-2 MSD Client ID:

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
1,1,1-Trichloroethane	100	90.7	91	15	35	55-150	
1,1,2-Trichloroethane	100	95.0	95	5	35	65-130	
1,1-Dichloroethane	100	89.2	89	6	35	57-135	
1,1-Dichloroethene	100	87.3	87	12	35	50-156	
1,2,4-Trichlorobenzene	100	83.8	84	8	35	35-140	
1,2,4-Trimethylbenzene	100	82.9	83	10	35	54-128	
1,2-Dichloroethane	100	89.1	89	5	35	62-137	
1,3,5-Trimethylbenzene	100	85.3	85	15	35	53-130	
Benzene	100	90.9	91	8	31	67-126	
Carbon tetrachloride	100	99.3	99	22	35	51-154	
Chloroform	100	88.8	89	3	35	67-133	
cis-1,2-Dichloroethene	100	102	90	5	35	64-134	
Dichlorodifluoromethane	100	97.8	98	17	35	16-140	
Ethylbenzene	100	83.6	84	12	34	66-123	
Methyl tert-butyl ether	100	98.6	99	4	35	50-137	
Methylene Chloride	100	81.8	82	2	35	48-138	
m-Xylene & p-Xylene	100	84.1	84	12	35	58-127	
Naphthalene	100	96.4	96	10	35	28-150	
o-Xylene	100	86.3	86	12	35	61-126	
Tetrachloroethene	100	260	70	10	35	54-138	
Toluene	100	85.7	86	10	33	63-130	
trans-1,2-Dichloroethene	100	92.3	92	7	25	70-137	
Trichloroethene	100	93.3	89	10	35	58-139	
Vinyl chloride	100	97.6	98	6	35	38-147	
Xylenes, Total	200	170	85	12	35	60-126	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM IV
GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab File ID: UXJ0685.D Lab Sample ID: MB 240-269880/6

Matrix: Water Heated Purge:(Y/N) N

Instrument ID: A3UX11 Date Analyzed: 03/09/2017 12:39

GC Column: DB-624 ID: 0.18(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 240-269880/4	UXJ0681.D	03/09/2017 11:08
WS-SD1-A-030217	240-76348-1	UXJ0704.D	03/09/2017 20:20
WS-SD2-A-030217	240-76348-2	UXJ0705.D	03/09/2017 20:43
	200-37604-B-2 MS	UXJ0706.D	03/09/2017 21:05
	200-37604-B-2 MSD	UXJ0707.D	03/09/2017 21:28

FORM IV
GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab File ID: UXM1088.D Lab Sample ID: MB 240-269898/8

Matrix: Water Heated Purge:(Y/N) N

Instrument ID: A3UX16 Date Analyzed: 03/09/2017 15:56

GC Column: DB-624 ID: 0.18(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 240-269898/5	UXM1085.D	03/09/2017 14:47
WS-SD3-A-030217	240-76348-3	UXM1089.D	03/09/2017 16:45
WS-HRS1-A-030217	240-76348-4	UXM1090.D	03/09/2017 17:07
WS-HRS2-A-030217	240-76348-5	UXM1091.D	03/09/2017 17:30
WS-HRS3-A-030217	240-76348-6	UXM1092.D	03/09/2017 17:53
WS-HRS4-A-030217	240-76348-7	UXM1093.D	03/09/2017 18:16
WS-HRS5-A-030217	240-76348-8	UXM1094.D	03/09/2017 18:39
WS-HRS6-A-030217	240-76348-9	UXM1095.D	03/09/2017 19:02
WS-HRS7-A-030217	240-76348-10	UXM1096.D	03/09/2017 19:25
WS-LS5-A-030217	240-76348-11	UXM1097.D	03/09/2017 19:48
WS-BRS-A-030317	240-76348-12	UXM1098.D	03/09/2017 20:11
WS-SP1-A-030217	240-76348-13	UXM1099.D	03/09/2017 20:35
WS-SP1A-A-030317	240-76348-14	UXM1100.D	03/09/2017 20:58
WS-ELS-A-030317	240-76348-15	UXM1101.D	03/09/2017 21:21
TB-030317	240-76348-16	UXM1102.D	03/09/2017 21:44
WS-SP1A-A-030317 MS	240-76348-14 MS	UXM1103.D	03/09/2017 22:07
WS-SP1A-A-030317 MSD	240-76348-14 MSD	UXM1104.D	03/09/2017 22:30

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab File ID: BFB70308.D BFB Injection Date: 03/08/2017

Instrument ID: A3UX11 BFB Injection Time: 08:48

Analysis Batch No.: 269659

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	22.1	
75	30.0 - 60.0 % of mass 95	53.5	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.7	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	88.8	
175	5.0 - 9.0 % of mass 174	7.2	(8.1) 1
176	95.0 - 101.0 % of mass 174	85.2	(96.0) 1
177	5.0 - 9.0 % of mass 176	5.6	(6.6) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	STD8260 240-269659/2	UXJ0659A.D	03/08/2017	12:44
	STD8260 240-269659/3	UXJ0660A.D	03/08/2017	13:06
	STD8260 240-269659/4	UXJ0661A.D	03/08/2017	13:29
	STD8260 240-269659/5	UXJ0662A.D	03/08/2017	13:52
	STD8260 240-269659/6	UXJ0663A.D	03/08/2017	14:15
	STD8260 240-269659/7	UXJ0664A.D	03/08/2017	14:37
	ICV 240-269659/20	UXJ0665A.D	03/08/2017	15:00
	STD6 240-269659/8	UXJ0666A.D	03/08/2017	15:23
	STD5 240-269659/9	UXJ0667.D	03/08/2017	15:46
	STD4 240-269659/10	UXJ0668.D	03/08/2017	16:08
	STD3 240-269659/11	UXJ0669.D	03/08/2017	16:31
	STD2 240-269659/12	UXJ0670.D	03/08/2017	16:54
	STD1 240-269659/13	UXJ0671.D	03/08/2017	17:17
	ICV 240-269659/21	UXJ0672.D	03/08/2017	17:39

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: ICV 240-269659/20 Calibration Date: 03/08/2017 15:00

Instrument ID: A3UX11 Calib Start Date: 03/08/2017 12:44

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 14:37

Lab File ID: UXJ0665A.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.2141	0.2217	0.1000	0.0104	0.0100	3.5	20.0
Chloromethane	Ave	0.2502	0.2781	0.1000	0.0111	0.0100	11.2	20.0
Vinyl chloride	Ave	0.2549	0.2801	0.1000	0.0110	0.0100	9.9	20.0
Butadiene	Ave	0.2571	0.2684		0.0104	0.0100	4.4	30.0
Bromomethane	Ave	0.1127	0.1181	0.0500	0.0105	0.0100	4.8	20.0
Chloroethane	Ave	0.1118	0.1314	0.0500	0.0118	0.0100	17.6	20.0
Dichlorofluoromethane	Ave	0.2813	0.3066		0.0109	0.0100	9.0	20.0
Trichlorofluoromethane	Ave	0.2694	0.2697	0.1000	0.0100	0.0100	0.0	20.0
Ethyl ether	Ave	0.2458	0.2794		0.0114	0.0100	13.7	20.0
Acrolein	Ave	0.0306	0.0420		0.0686	0.0500	37.2	50.0
1,1-Dichloroethene	Ave	0.2866	0.3054	0.1000	0.0107	0.0100	6.6	20.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.1374	0.1455	0.0500	0.0106	0.0100	5.9	20.0
Acetone	Ave	0.1129	0.0657	0.0100	0.0116	0.0200	-41.9	50.0
Iodomethane	Ave	0.4096	0.4458		0.0109	0.0100	8.8	20.0
Carbon disulfide	Ave	0.7208	0.8049	0.1000	0.0112	0.0100	11.7	20.0
3-Chloro-1-propene	Ave	0.2104	0.2290		0.0109	0.0100	8.8	20.0
Methyl acetate	Ave	0.1724	0.1831	0.1000	0.0531	0.0500	6.2	20.0
Methylene Chloride	Ave	0.3347	0.3322	0.1000	0.00993	0.0100	-0.7	50.0
2-Methyl-2-propanol	Ave	0.0154	0.0132		0.0858	0.100	-14.2	50.0
Acrylonitrile	Ave	0.0809	0.0872		0.108	0.100	7.8	20.0
Methyl tert-butyl ether	Ave	0.8079	0.9100	0.1000	0.0113	0.0100	12.6	20.0
trans-1,2-Dichloroethene	Ave	0.3204	0.3470	0.1000	0.0108	0.0100	8.3	20.0
Hexane	Ave	0.0714	0.0701		0.00982	0.0100	-1.8	20.0
1,1-Dichloroethane	Ave	0.5549	0.5789	0.2000	0.0104	0.0100	4.3	20.0
Vinyl acetate	Ave	0.5453	0.6208		0.0114	0.0100	13.8	50.0
cis-1,2-Dichloroethene	Ave	0.3400	0.3641	0.1000	0.0107	0.0100	7.1	20.0
2,2-Dichloropropane	Ave	0.3311	0.3487		0.0105	0.0100	5.3	20.0
2-Butanone (MEK)	Ave	0.1215	0.0935	0.0100	0.0154	0.0200	-23.1*	20.0
Chlorobromomethane	Ave	0.1485	0.1594		0.0107	0.0100	7.3	20.0
Tetrahydrofuran	Ave	0.0616	0.0678		0.0220	0.0200	10.1	20.0
Chloroform	Ave	0.5269	0.5575	0.2000	0.0106	0.0100	5.8	20.0
1,1,1-Trichloroethane	Ave	0.4040	0.4274	0.1000	0.0106	0.0100	5.8	20.0
Cyclohexane	Ave	0.4041	0.4252	0.1000	0.0105	0.0100	5.2	20.0
1,1-Dichloropropene	Ave	0.4065	0.4400		0.0108	0.0100	8.2	20.0
Carbon tetrachloride	Ave	0.2830	0.3092	0.1000	0.0109	0.0100	9.3	20.0
Isobutyl alcohol	Ave	0.0073	0.0061		0.209	0.250	-16.5	20.0
1,2-Dichloroethane	Ave	0.4129	0.4327	0.1000	0.0105	0.0100	4.8	20.0
Benzene	Ave	1.216	1.290	0.5000	0.0106	0.0100	6.0	20.0
n-Heptane	Ave	0.0696	0.0600		0.00862	0.0100	-13.8	20.0
Trichloroethene	Ave	0.3151	0.3336	0.1500	0.0106	0.0100	5.8	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: ICV 240-269659/20 Calibration Date: 03/08/2017 15:00

Instrument ID: A3UX11 Calib Start Date: 03/08/2017 12:44

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 14:37

Lab File ID: UXJ0665A.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Methylcyclohexane	Ave	0.3753	0.3682	0.1000	0.00981	0.0100	-1.9	20.0
1,2-Dichloropropane	Ave	0.2898	0.3072	0.1000	0.0106	0.0100	6.0	20.0
Dibromomethane	Ave	0.1608	0.1623		0.0101	0.0100	0.9	20.0
1,4-Dioxane	Qua		0.0009		0.0896	0.200	-55.2*	50.0
Dichlorobromomethane	Ave	0.3324	0.3571	0.1500	0.0107	0.0100	7.4	20.0
2-Chloroethyl vinyl ether	Ave	0.1581	0.1701		0.0108	0.0100	7.6	20.0
cis-1,3-Dichloropropene	Ave	0.4364	0.4640	0.1500	0.0106	0.0100	6.3	20.0
4-Methyl-2-pentanone (MIBK)	Ave	0.2144	0.2248	0.0500	0.0210	0.0200	4.8	20.0
Toluene	Ave	1.825	1.883	0.4000	0.0103	0.0100	3.1	20.0
trans-1,3-Dichloropropene	Ave	0.5459	0.5727	0.1000	0.0105	0.0100	4.9	20.0
Ethyl methacrylate	Ave	0.4475	0.4978		0.0111	0.0100	11.2	20.0
1,1,2-Trichloroethane	Ave	0.3061	0.3386	0.1000	0.0111	0.0100	10.6	20.0
Tetrachloroethene	Ave	0.3310	0.3407	0.1500	0.0103	0.0100	2.9	20.0
1,3-Dichloropropane	Ave	0.5839	0.5970		0.0102	0.0100	2.2	20.0
2-Hexanone	Ave	0.2316	0.2070	0.0500	0.0179	0.0200	-10.6	20.0
Chlorodibromomethane	Ave	0.2761	0.3022		0.0109	0.0100	9.4	20.0
Ethylene Dibromide	Ave	0.2972	0.3133		0.0105	0.0100	5.4	20.0
Chlorobenzene	Ave	1.062	1.124	0.3000	0.0106	0.0100	5.8	20.0
1,1,1,2-Tetrachloroethane	Ave	0.3347	0.3714		0.0111	0.0100	11.0	20.0
Ethylbenzene	Ave	0.5885	0.6134		0.0104	0.0100	4.2	20.0
m-Xylene & p-Xylene	Ave	0.7093	0.7290		0.0103	0.0100	2.8	20.0
o-Xylene	Ave	0.6806	0.7093		0.0104	0.0100	4.2	20.0
Styrene	Ave	1.173	1.231	0.3000	0.0105	0.0100	4.9	20.0
Bromoform	Ave	0.1260	0.1351	0.1000	0.0107	0.0100	7.2	20.0
Isopropylbenzene	Ave	1.581	1.685	0.1000	0.0107	0.0100	6.6	20.0
1,1,2,2-Tetrachloroethane	Ave	0.6600	0.7190	0.3000	0.0109	0.0100	8.9	20.0
Bromobenzene	Ave	0.9141	0.9540		0.0104	0.0100	4.4	20.0
1,2,3-Trichloropropane	Ave	0.2290	0.2521		0.0110	0.0100	10.1	20.0
trans-1,4-Dichloro-2-butene	Lin1		0.1333		0.00984	0.0100	-1.6	20.0
N-Propylbenzene	Ave	0.9176	0.9606		0.0105	0.0100	4.7	20.0
2-Chlorotoluene	Ave	0.8050	0.8338		0.0104	0.0100	3.6	20.0
1,3,5-Trimethylbenzene	Ave	2.527	2.666		0.0106	0.0100	5.5	20.0
4-Chlorotoluene	Ave	0.8639	0.8780		0.0102	0.0100	1.6	20.0
tert-Butylbenzene	Ave	2.154	2.168		0.0101	0.0100	0.6	20.0
1,2,4-Trimethylbenzene	Ave	2.612	2.677		0.0102	0.0100	2.5	20.0
sec-Butylbenzene	Ave	2.748	2.796		0.0102	0.0100	1.8	20.0
1,3-Dichlorobenzene	Ave	1.472	1.505	0.6000	0.0102	0.0100	2.2	20.0
4-Isopropyltoluene	Ave	2.315	2.393		0.0103	0.0100	3.4	20.0
1,4-Dichlorobenzene	Ave	1.534	1.571	0.5000	0.0102	0.0100	2.4	20.0
n-Butylbenzene	Ave	1.802	1.823		0.0101	0.0100	1.2	20.0
1,2-Dichlorobenzene	Ave	1.312	1.399	0.4000	0.0107	0.0100	6.7	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: ICV 240-269659/20 Calibration Date: 03/08/2017 15:00

Instrument ID: A3UX11 Calib Start Date: 03/08/2017 12:44

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 14:37

Lab File ID: UXJ0665A.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2-Dibromo-3-Chloropropane	Ave	0.0756	0.0866	0.0500	0.0115	0.0100	14.6	50.0
1,2,4-Trichlorobenzene	Ave	0.5403	0.5530	0.2000	0.0102	0.0100	2.4	50.0
Hexachlorobutadiene	Ave	0.2270	0.2047		0.00902	0.0100	-9.8	20.0
Naphthalene	Ave	1.254	1.357		0.0108	0.0100	8.3	50.0
1,2,3-Trichlorobenzene	Ave	0.4705	0.4957		0.0105	0.0100	5.4	20.0
Dibromofluoromethane (Surr)	Ave	0.2584	0.2455		0.0114	0.0120	-5.0	20.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.3310	0.3076		0.0111	0.0120	-7.1	20.0
Toluene-d8 (Surr)	Ave	1.477	1.381		0.0112	0.0120	-6.5	20.0
4-Bromofluorobenzene (Surr)	Ave	0.4512	0.4171		0.0111	0.0120	-7.6	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: ICV 240-269659/21 Calibration Date: 03/08/2017 17:39

Instrument ID: A3UX11 Calib Start Date: 03/08/2017 15:23

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 17:17

Lab File ID: UXJ0672.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Acetonitrile	Ave	0.0220	0.0190		0.0862	0.100	-13.8	20.0
Isopropyl ether	Ave	0.2861	0.3019		0.0106	0.0100	5.5	20.0
2-Chloro-1,3-butadiene	Ave	0.5046	0.5119		0.0101	0.0100	1.4	20.0
Tert-butyl ethyl ether	Ave	0.8972	0.9102		0.0101	0.0100	1.5	20.0
Ethyl acetate	Ave	0.2283	0.2147		0.0188	0.0200	-6.0	50.0
Propionitrile	Ave	0.0243	0.0236		0.0972	0.100	-2.8	20.0
Methacrylonitrile	Ave	0.1552	0.1489		0.0959	0.100	-4.1	20.0
Tert-amyl methyl ether	Ave	0.8116	0.8174		0.0101	0.0100	0.7	20.0
n-Butanol	Ave	0.0057	0.0030		0.132	0.250	-47.1*	20.0
Ethyl acrylate	Ave	0.2989	0.2853		0.00955	0.0100	-4.5	20.0
Methyl methacrylate	Ave	0.2297	0.2272		0.0198	0.0200	-1.1	20.0
2-Nitropropane	Ave	0.0526	0.0498		0.0189	0.0200	-5.4	20.0
n-Butyl acetate	Ave	0.3459	0.3340		0.00966	0.0100	-3.4	30.0
1-Chlorohexane	Ave	0.4496	0.4395		0.00977	0.0100	-2.3	20.0
Cyclohexanone	Ave	0.0146	0.0077		0.0528	0.100	-47.2*	20.0
Pentachloroethane	Lin1		0.1588		0.0193	0.0200	-3.4	20.0
1,2,3-Trimethylbenzene	Ave	2.513	2.536		0.0101	0.0100	0.9	20.0
Benzyl chloride	Lin1		0.2378		0.00862	0.0100	-13.8	20.0
1,3,5-Trichlorobenzene	Ave	0.6564	0.6310		0.00961	0.0100	-3.9	20.0
2-Methylnaphthalene	Ave	0.7957	0.6523		0.0164	0.0200	-18.0	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: CCVIS 240-269880/2 Calibration Date: 03/09/2017 11:31

Instrument ID: A3UX11 Calib Start Date: 03/08/2017 12:44

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 14:37

Lab File ID: UXJ0682.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.2141	0.2592	0.1000	0.0121	0.0100	21.1*	20.0
Chloromethane	Ave	0.2502	0.2623	0.1000	0.0105	0.0100	4.8	20.0
Vinyl chloride	Ave	0.2549	0.2625	0.1000	0.0103	0.0100	3.0	20.0
Butadiene	Ave	0.2571	0.2743		0.0107	0.0100	6.7	20.0
Bromomethane	Ave	0.1127	0.1025	0.0500	0.00909	0.0100	-9.1	20.0
Chloroethane	Ave	0.1118	0.1171	0.0500	0.0105	0.0100	4.8	20.0
Dichlorofluoromethane	Ave	0.2813	0.2670		0.00949	0.0100	-5.1	20.0
Trichlorofluoromethane	Ave	0.2694	0.2837	0.1000	0.0105	0.0100	5.3	20.0
Ethyl ether	Ave	0.2458	0.2527		0.0103	0.0100	2.8	20.0
Acrolein	Ave	0.0306	0.0338		0.0551	0.0500	10.3	50.0
1,1-Dichloroethene	Ave	0.2866	0.2736	0.1000	0.00955	0.0100	-4.5	20.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.1374	0.1532	0.0500	0.0111	0.0100	11.5	20.0
Acetone	Ave	0.1129	0.0945	0.0100	0.0167	0.0200	-16.3	50.0
Iodomethane	Ave	0.4096	0.3633		0.00887	0.0100	-11.3	20.0
Carbon disulfide	Ave	0.7208	0.6871	0.1000	0.00953	0.0100	-4.7	20.0
3-Chloro-1-propene	Ave	0.2104	0.2171		0.0103	0.0100	3.2	20.0
Methyl acetate	Ave	0.1724	0.1830	0.1000	0.0531	0.0500	6.1	20.0
Methylene Chloride	Ave	0.3347	0.2885	0.1000	0.00862	0.0100	-13.8	50.0
2-Methyl-2-propanol	Ave	0.0154	0.0146		0.0948	0.100	-5.2	50.0
Acrylonitrile	Ave	0.0809	0.0862		0.107	0.100	6.5	20.0
Methyl tert-butyl ether	Ave	0.8079	0.8529	0.1000	0.0106	0.0100	5.6	20.0
trans-1,2-Dichloroethene	Ave	0.3204	0.3172	0.1000	0.00990	0.0100	-1.0	20.0
Hexane	Ave	0.0714	0.0825		0.0115	0.0100	15.5	20.0
1,1-Dichloroethane	Ave	0.5549	0.5387	0.2000	0.00971	0.0100	-2.9	20.0
Vinyl acetate	Ave	0.5453	0.5729		0.0105	0.0100	5.0	50.0
cis-1,2-Dichloroethene	Ave	0.3400	0.3361	0.1000	0.00988	0.0100	-1.2	20.0
2,2-Dichloropropane	Ave	0.3311	0.3220		0.00973	0.0100	-2.7	20.0
2-Butanone (MEK)	Ave	0.1215	0.1183	0.0100	0.0195	0.0200	-2.6	20.0
Chlorobromomethane	Ave	0.1485	0.1469		0.00989	0.0100	-1.1	20.0
Tetrahydrofuran	Ave	0.0616	0.0643		0.0209	0.0200	4.4	20.0
Chloroform	Ave	0.5269	0.5173	0.2000	0.00982	0.0100	-1.8	20.0
1,1,1-Trichloroethane	Ave	0.4040	0.4063	0.1000	0.0101	0.0100	0.6	20.0
Cyclohexane	Ave	0.4041	0.4579	0.1000	0.0113	0.0100	13.3	20.0
1,1-Dichloropropene	Ave	0.4065	0.4169		0.0103	0.0100	2.6	20.0
Carbon tetrachloride	Ave	0.2830	0.3311	0.1000	0.0117	0.0100	17.0	20.0
Isobutyl alcohol	Ave	0.0073	0.0068		0.231	0.250	-7.5	20.0
1,2-Dichloroethane	Ave	0.4129	0.3942	0.1000	0.00955	0.0100	-4.5	20.0
Benzene	Ave	1.216	1.178	0.5000	0.00969	0.0100	-3.1	20.0
n-Heptane	Ave	0.0696	0.0739		0.0106	0.0100	6.2	20.0
Trichloroethene	Ave	0.3151	0.3067	0.1500	0.00973	0.0100	-2.7	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: CCVIS 240-269880/2 Calibration Date: 03/09/2017 11:31

Instrument ID: A3UX11 Calib Start Date: 03/08/2017 12:44

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 14:37

Lab File ID: UXJ0682.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Methylcyclohexane	Ave	0.3753	0.4298	0.1000	0.0115	0.0100	14.5	20.0
1,2-Dichloropropane	Ave	0.2898	0.2888	0.1000	0.00997	0.0100	-0.3	20.0
Dibromomethane	Ave	0.1608	0.1616		0.0101	0.0100	0.5	20.0
1,4-Dioxane	Qua		0.0015		0.154	0.200	-22.8	50.0
Dichlorobromomethane	Ave	0.3324	0.3462	0.1500	0.0104	0.0100	4.1	20.0
2-Chloroethyl vinyl ether	Ave	0.1581	0.1638		0.0207	0.0200	3.6	20.0
cis-1,3-Dichloropropene	Ave	0.4364	0.4402	0.1500	0.0101	0.0100	0.9	20.0
4-Methyl-2-pentanone (MIBK)	Ave	0.2144	0.2200	0.0500	0.0205	0.0200	2.6	20.0
Toluene	Ave	1.825	1.735	0.4000	0.00950	0.0100	-5.0	20.0
trans-1,3-Dichloropropene	Ave	0.5459	0.5273	0.1000	0.00966	0.0100	-3.4	20.0
Ethyl methacrylate	Ave	0.4475	0.4641		0.0104	0.0100	3.7	20.0
1,1,2-Trichloroethane	Ave	0.3061	0.2990	0.1000	0.00977	0.0100	-2.3	20.0
Tetrachloroethene	Ave	0.3310	0.3204	0.1500	0.00968	0.0100	-3.2	20.0
1,3-Dichloropropane	Ave	0.5839	0.5561		0.00952	0.0100	-4.8	20.0
2-Hexanone	Ave	0.2316	0.2254	0.0500	0.0195	0.0200	-2.7	20.0
Chlorodibromomethane	Ave	0.2761	0.3051		0.0110	0.0100	10.5	20.0
Ethylene Dibromide	Ave	0.2972	0.2961		0.00996	0.0100	-0.4	20.0
Chlorobenzene	Ave	1.062	1.015	0.3000	0.00956	0.0100	-4.4	20.0
1,1,1,2-Tetrachloroethane	Ave	0.3347	0.3366		0.0101	0.0100	0.6	20.0
Ethylbenzene	Ave	0.5885	0.5571		0.00947	0.0100	-5.3	20.0
m-Xylene & p-Xylene	Ave	0.7093	0.6780		0.00956	0.0100	-4.4	20.0
o-Xylene	Ave	0.6806	0.6529		0.00959	0.0100	-4.1	20.0
Styrene	Ave	1.173	1.118	0.3000	0.00952	0.0100	-4.8	20.0
Bromoform	Ave	0.1260	0.1562	0.1000	0.0124	0.0100	23.9*	20.0
Isopropylbenzene	Ave	1.581	1.566	0.1000	0.00990	0.0100	-1.0	20.0
1,1,2,2-Tetrachloroethane	Ave	0.6600	0.6940	0.3000	0.0105	0.0100	5.1	20.0
Bromobenzene	Ave	0.9141	0.8732		0.00955	0.0100	-4.5	20.0
1,2,3-Trichloropropane	Ave	0.2290	0.2373		0.0104	0.0100	3.6	20.0
trans-1,4-Dichloro-2-butene	Lin1		0.1319		0.00974	0.0100	-2.6	20.0
N-Propylbenzene	Ave	0.9176	0.8788		0.00958	0.0100	-4.2	20.0
2-Chlorotoluene	Ave	0.8050	0.7972		0.00990	0.0100	-1.0	20.0
1,3,5-Trimethylbenzene	Ave	2.527	2.501		0.00990	0.0100	-1.0	20.0
4-Chlorotoluene	Ave	0.8639	0.8358		0.00967	0.0100	-3.3	20.0
tert-Butylbenzene	Ave	2.154	2.080		0.00966	0.0100	-3.4	20.0
1,2,4-Trimethylbenzene	Ave	2.612	2.534		0.00970	0.0100	-3.0	20.0
sec-Butylbenzene	Ave	2.748	2.743		0.00998	0.0100	-0.2	20.0
1,3-Dichlorobenzene	Ave	1.472	1.419	0.6000	0.00964	0.0100	-3.6	20.0
4-Isopropyltoluene	Ave	2.315	2.300		0.00994	0.0100	-0.6	20.0
1,4-Dichlorobenzene	Ave	1.534	1.485	0.5000	0.00968	0.0100	-3.2	20.0
n-Butylbenzene	Ave	1.802	1.818		0.0101	0.0100	0.9	20.0
1,2-Dichlorobenzene	Ave	1.312	1.283	0.4000	0.00978	0.0100	-2.2	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: CCVIS 240-269880/2 Calibration Date: 03/09/2017 11:31

Instrument ID: A3UX11 Calib Start Date: 03/08/2017 12:44

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 14:37

Lab File ID: UXJ0682.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2-Dibromo-3-Chloropropane	Ave	0.0756	0.0875	0.0500	0.0116	0.0100	15.8	50.0
1,2,4-Trichlorobenzene	Ave	0.5403	0.5108	0.2000	0.00945	0.0100	-5.5	50.0
Hexachlorobutadiene	Ave	0.2270	0.2098		0.00924	0.0100	-7.6	20.0
Naphthalene	Ave	1.254	1.299		0.0104	0.0100	3.6	50.0
1,2,3-Trichlorobenzene	Ave	0.4705	0.4482		0.00953	0.0100	-4.7	20.0
Dibromofluoromethane (Surr)	Ave	0.2584	0.2232		0.0103	0.0120	-13.6	20.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.3310	0.2893		0.0105	0.0120	-12.6	20.0
Toluene-d8 (Surr)	Ave	1.477	1.272		0.0103	0.0120	-13.9	20.0
4-Bromofluorobenzene (Surr)	Ave	0.4512	0.3855		0.0102	0.0120	-14.6	20.0

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab File ID: BFB70309.D BFB Injection Date: 03/09/2017

Instrument ID: A3UX11 BFB Injection Time: 10:11

Analysis Batch No.: 269880

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	21.5	
75	30.0 - 60.0 % of mass 95	53.9	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.5	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	92.5	
175	5.0 - 9.0 % of mass 174	7.4	(7.9) 1
176	95.0 - 101.0 % of mass 174	88.7	(95.8) 1
177	5.0 - 9.0 % of mass 176	5.8	(6.6) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	LCS 240-269880/4	UXJ0681.D	03/09/2017	11:08
	CCVIS 240-269880/2	UXJ0682.D	03/09/2017	11:31
	CCV 240-269880/3	UXJ0683.D	03/09/2017	11:53
	MB 240-269880/6	UXJ0685.D	03/09/2017	12:39
WS-SD1-A-030217	240-76348-1	UXJ0704.D	03/09/2017	20:20
WS-SD2-A-030217	240-76348-2	UXJ0705.D	03/09/2017	20:43
	200-37604-B-2 MS	UXJ0706.D	03/09/2017	21:05
	200-37604-B-2 MSD	UXJ0707.D	03/09/2017	21:28

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: CCVIS 240-269880/2 Calibration Date: 03/09/2017 11:31

Instrument ID: A3UX11 Calib Start Date: 03/08/2017 12:44

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 14:37

Lab File ID: UXJ0682.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.2141	0.2592	0.1000	0.0121	0.0100	21.1*	20.0
Chloromethane	Ave	0.2502	0.2623	0.1000	0.0105	0.0100	4.8	20.0
Vinyl chloride	Ave	0.2549	0.2625	0.1000	0.0103	0.0100	3.0	20.0
Butadiene	Ave	0.2571	0.2743		0.0107	0.0100	6.7	20.0
Bromomethane	Ave	0.1127	0.1025	0.0500	0.00909	0.0100	-9.1	20.0
Chloroethane	Ave	0.1118	0.1171	0.0500	0.0105	0.0100	4.8	20.0
Dichlorofluoromethane	Ave	0.2813	0.2670		0.00949	0.0100	-5.1	20.0
Trichlorofluoromethane	Ave	0.2694	0.2837	0.1000	0.0105	0.0100	5.3	20.0
Ethyl ether	Ave	0.2458	0.2527		0.0103	0.0100	2.8	20.0
Acrolein	Ave	0.0306	0.0338		0.0551	0.0500	10.3	50.0
1,1-Dichloroethene	Ave	0.2866	0.2736	0.1000	0.00955	0.0100	-4.5	20.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.1374	0.1532	0.0500	0.0111	0.0100	11.5	20.0
Acetone	Ave	0.1129	0.0945	0.0100	0.0167	0.0200	-16.3	50.0
Iodomethane	Ave	0.4096	0.3633		0.00887	0.0100	-11.3	20.0
Carbon disulfide	Ave	0.7208	0.6871	0.1000	0.00953	0.0100	-4.7	20.0
3-Chloro-1-propene	Ave	0.2104	0.2171		0.0103	0.0100	3.2	20.0
Methyl acetate	Ave	0.1724	0.1830	0.1000	0.0531	0.0500	6.1	20.0
Methylene Chloride	Ave	0.3347	0.2885	0.1000	0.00862	0.0100	-13.8	50.0
2-Methyl-2-propanol	Ave	0.0154	0.0146		0.0948	0.100	-5.2	50.0
Acrylonitrile	Ave	0.0809	0.0862		0.107	0.100	6.5	20.0
Methyl tert-butyl ether	Ave	0.8079	0.8529	0.1000	0.0106	0.0100	5.6	20.0
trans-1,2-Dichloroethene	Ave	0.3204	0.3172	0.1000	0.00990	0.0100	-1.0	20.0
Hexane	Ave	0.0714	0.0825		0.0115	0.0100	15.5	20.0
1,1-Dichloroethane	Ave	0.5549	0.5387	0.2000	0.00971	0.0100	-2.9	20.0
Vinyl acetate	Ave	0.5453	0.5729		0.0105	0.0100	5.0	50.0
cis-1,2-Dichloroethene	Ave	0.3400	0.3361	0.1000	0.00988	0.0100	-1.2	20.0
2,2-Dichloropropane	Ave	0.3311	0.3220		0.00973	0.0100	-2.7	20.0
2-Butanone (MEK)	Ave	0.1215	0.1183	0.0100	0.0195	0.0200	-2.6	20.0
Chlorobromomethane	Ave	0.1485	0.1469		0.00989	0.0100	-1.1	20.0
Tetrahydrofuran	Ave	0.0616	0.0643		0.0209	0.0200	4.4	20.0
Chloroform	Ave	0.5269	0.5173	0.2000	0.00982	0.0100	-1.8	20.0
1,1,1-Trichloroethane	Ave	0.4040	0.4063	0.1000	0.0101	0.0100	0.6	20.0
Cyclohexane	Ave	0.4041	0.4579	0.1000	0.0113	0.0100	13.3	20.0
1,1-Dichloropropene	Ave	0.4065	0.4169		0.0103	0.0100	2.6	20.0
Carbon tetrachloride	Ave	0.2830	0.3311	0.1000	0.0117	0.0100	17.0	20.0
Isobutyl alcohol	Ave	0.0073	0.0068		0.231	0.250	-7.5	20.0
1,2-Dichloroethane	Ave	0.4129	0.3942	0.1000	0.00955	0.0100	-4.5	20.0
Benzene	Ave	1.216	1.178	0.5000	0.00969	0.0100	-3.1	20.0
n-Heptane	Ave	0.0696	0.0739		0.0106	0.0100	6.2	20.0
Trichloroethene	Ave	0.3151	0.3067	0.1500	0.00973	0.0100	-2.7	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: CCVIS 240-269880/2 Calibration Date: 03/09/2017 11:31

Instrument ID: A3UX11 Calib Start Date: 03/08/2017 12:44

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 14:37

Lab File ID: UXJ0682.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Methylcyclohexane	Ave	0.3753	0.4298	0.1000	0.0115	0.0100	14.5	20.0
1,2-Dichloropropane	Ave	0.2898	0.2888	0.1000	0.00997	0.0100	-0.3	20.0
Dibromomethane	Ave	0.1608	0.1616		0.0101	0.0100	0.5	20.0
1,4-Dioxane	Qua		0.0015		0.154	0.200	-22.8	50.0
Dichlorobromomethane	Ave	0.3324	0.3462	0.1500	0.0104	0.0100	4.1	20.0
2-Chloroethyl vinyl ether	Ave	0.1581	0.1638		0.0207	0.0200	3.6	20.0
cis-1,3-Dichloropropene	Ave	0.4364	0.4402	0.1500	0.0101	0.0100	0.9	20.0
4-Methyl-2-pentanone (MIBK)	Ave	0.2144	0.2200	0.0500	0.0205	0.0200	2.6	20.0
Toluene	Ave	1.825	1.735	0.4000	0.00950	0.0100	-5.0	20.0
trans-1,3-Dichloropropene	Ave	0.5459	0.5273	0.1000	0.00966	0.0100	-3.4	20.0
Ethyl methacrylate	Ave	0.4475	0.4641		0.0104	0.0100	3.7	20.0
1,1,2-Trichloroethane	Ave	0.3061	0.2990	0.1000	0.00977	0.0100	-2.3	20.0
Tetrachloroethene	Ave	0.3310	0.3204	0.1500	0.00968	0.0100	-3.2	20.0
1,3-Dichloropropane	Ave	0.5839	0.5561		0.00952	0.0100	-4.8	20.0
2-Hexanone	Ave	0.2316	0.2254	0.0500	0.0195	0.0200	-2.7	20.0
Chlorodibromomethane	Ave	0.2761	0.3051		0.0110	0.0100	10.5	20.0
Ethylene Dibromide	Ave	0.2972	0.2961		0.00996	0.0100	-0.4	20.0
Chlorobenzene	Ave	1.062	1.015	0.3000	0.00956	0.0100	-4.4	20.0
1,1,1,2-Tetrachloroethane	Ave	0.3347	0.3366		0.0101	0.0100	0.6	20.0
Ethylbenzene	Ave	0.5885	0.5571		0.00947	0.0100	-5.3	20.0
m-Xylene & p-Xylene	Ave	0.7093	0.6780		0.00956	0.0100	-4.4	20.0
o-Xylene	Ave	0.6806	0.6529		0.00959	0.0100	-4.1	20.0
Styrene	Ave	1.173	1.118	0.3000	0.00952	0.0100	-4.8	20.0
Bromoform	Ave	0.1260	0.1562	0.1000	0.0124	0.0100	23.9*	20.0
Isopropylbenzene	Ave	1.581	1.566	0.1000	0.00990	0.0100	-1.0	20.0
1,1,2,2-Tetrachloroethane	Ave	0.6600	0.6940	0.3000	0.0105	0.0100	5.1	20.0
Bromobenzene	Ave	0.9141	0.8732		0.00955	0.0100	-4.5	20.0
1,2,3-Trichloropropane	Ave	0.2290	0.2373		0.0104	0.0100	3.6	20.0
trans-1,4-Dichloro-2-butene	Lin1		0.1319		0.00974	0.0100	-2.6	20.0
N-Propylbenzene	Ave	0.9176	0.8788		0.00958	0.0100	-4.2	20.0
2-Chlorotoluene	Ave	0.8050	0.7972		0.00990	0.0100	-1.0	20.0
1,3,5-Trimethylbenzene	Ave	2.527	2.501		0.00990	0.0100	-1.0	20.0
4-Chlorotoluene	Ave	0.8639	0.8358		0.00967	0.0100	-3.3	20.0
tert-Butylbenzene	Ave	2.154	2.080		0.00966	0.0100	-3.4	20.0
1,2,4-Trimethylbenzene	Ave	2.612	2.534		0.00970	0.0100	-3.0	20.0
sec-Butylbenzene	Ave	2.748	2.743		0.00998	0.0100	-0.2	20.0
1,3-Dichlorobenzene	Ave	1.472	1.419	0.6000	0.00964	0.0100	-3.6	20.0
4-Isopropyltoluene	Ave	2.315	2.300		0.00994	0.0100	-0.6	20.0
1,4-Dichlorobenzene	Ave	1.534	1.485	0.5000	0.00968	0.0100	-3.2	20.0
n-Butylbenzene	Ave	1.802	1.818		0.0101	0.0100	0.9	20.0
1,2-Dichlorobenzene	Ave	1.312	1.283	0.4000	0.00978	0.0100	-2.2	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: CCVIS 240-269880/2 Calibration Date: 03/09/2017 11:31

Instrument ID: A3UX11 Calib Start Date: 03/08/2017 12:44

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 14:37

Lab File ID: UXJ0682.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2-Dibromo-3-Chloropropane	Ave	0.0756	0.0875	0.0500	0.0116	0.0100	15.8	50.0
1,2,4-Trichlorobenzene	Ave	0.5403	0.5108	0.2000	0.00945	0.0100	-5.5	50.0
Hexachlorobutadiene	Ave	0.2270	0.2098		0.00924	0.0100	-7.6	20.0
Naphthalene	Ave	1.254	1.299		0.0104	0.0100	3.6	50.0
1,2,3-Trichlorobenzene	Ave	0.4705	0.4482		0.00953	0.0100	-4.7	20.0
Dibromofluoromethane (Surr)	Ave	0.2584	0.2232		0.0103	0.0120	-13.6	20.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.3310	0.2893		0.0105	0.0120	-12.6	20.0
Toluene-d8 (Surr)	Ave	1.477	1.272		0.0103	0.0120	-13.9	20.0
4-Bromofluorobenzene (Surr)	Ave	0.4512	0.3855		0.0102	0.0120	-14.6	20.0

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab File ID: BFB5159.D BFB Injection Date: 02/08/2017

Instrument ID: A3UX16 BFB Injection Time: 10:47

Analysis Batch No.: 265930

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	17.1	
75	30.0 - 60.0 % of mass 95	47.0	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.7	
173	Less than 2.0 % of mass 174	0.6	(0.8) 1
174	50.0 - 120.00 % of mass 95	72.1	
175	5.0 - 9.0 % of mass 174	5.1	(7.1) 1
176	95.0 - 101.0 % of mass 174	70.6	(97.9) 1
177	5.0 - 9.0 % of mass 176	4.5	(6.3) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	STD8260 240-265930/8	UXM0695.D	02/08/2017	11:17
	STD8260 240-265930/9	UXM0696.D	02/08/2017	11:40
	STD8260 240-265930/10	UXM0697.D	02/08/2017	12:04
	ICIS 240-265930/11	UXM0698.D	02/08/2017	12:27
	STD8260 240-265930/12	UXM0699.D	02/08/2017	12:57
	STD8260 240-265930/13	UXM0700.D	02/08/2017	13:20
	STDA9 240-265930/15	UXM0702.D	02/08/2017	14:06
	STDA9 240-265930/16	UXM0703.D	02/08/2017	14:29
	STDA9 240-265930/17	UXM0704.D	02/08/2017	14:53
	STDA9 240-265930/18	UXM0705.D	02/08/2017	15:16
	STDA9 240-265930/19	UXM0706.D	02/08/2017	15:39
	STDA9 240-265930/20	UXM0707.D	02/08/2017	16:03
	ICV 240-265930/23	UXM0710.D	02/08/2017	17:12

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab File ID: BFB5177.D BFB Injection Date: 03/08/2017

Instrument ID: A3UX16 BFB Injection Time: 09:32

Analysis Batch No.: 269649

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	16.6	
75	30.0 - 60.0 % of mass 95	45.8	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.3	
173	Less than 2.0 % of mass 174	0.6	(0.8) 1
174	50.0 - 120.00 % of mass 95	71.5	
175	5.0 - 9.0 % of mass 174	5.1	(7.2) 1
176	95.0 - 101.0 % of mass 174	68.9	(96.4) 1
177	5.0 - 9.0 % of mass 176	4.3	(6.3) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	STD8260 240-269649/8	UXM1069.D	03/08/2017	10:00
	STD8260 240-269649/9	UXM1070.D	03/08/2017	10:23
	STD8260 240-269649/10	UXM1071.D	03/08/2017	10:46
	ICIS 240-269649/11	UXM1072.D	03/08/2017	11:10
	STD8260 240-269649/12	UXM1073.D	03/08/2017	11:33
	STD8260 240-269649/13	UXM1074.D	03/08/2017	11:56
	ICV 240-269649/22	UXM1076.D	03/08/2017	12:42

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab File ID: BFB5179.D BFB Injection Date: 03/09/2017

Instrument ID: A3UX16 BFB Injection Time: 13:56

Analysis Batch No.: 269898

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	16.5	
75	30.0 - 60.0 % of mass 95	47.1	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.7	
173	Less than 2.0 % of mass 174	0.4	(0.6) 1
174	50.0 - 120.00 % of mass 95	71.2	
175	5.0 - 9.0 % of mass 174	5.1	(7.1) 1
176	95.0 - 101.0 % of mass 174	69.5	(97.7) 1
177	5.0 - 9.0 % of mass 176	4.5	(6.5) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 240-269898/4	UXM1084.D	03/09/2017	14:24
	LCS 240-269898/5	UXM1085.D	03/09/2017	14:47
	CCV 240-269898/6	UXM1086.D	03/09/2017	15:10
	MB 240-269898/8	UXM1088.D	03/09/2017	15:56
WS-SD3-A-030217	240-76348-3	UXM1089.D	03/09/2017	16:45
WS-HRS1-A-030217	240-76348-4	UXM1090.D	03/09/2017	17:07
WS-HRS2-A-030217	240-76348-5	UXM1091.D	03/09/2017	17:30
WS-HRS3-A-030217	240-76348-6	UXM1092.D	03/09/2017	17:53
WS-HRS4-A-030217	240-76348-7	UXM1093.D	03/09/2017	18:16
WS-HRS5-A-030217	240-76348-8	UXM1094.D	03/09/2017	18:39
WS-HRS6-A-030217	240-76348-9	UXM1095.D	03/09/2017	19:02
WS-HRS7-A-030217	240-76348-10	UXM1096.D	03/09/2017	19:25
WS-LS5-A-030217	240-76348-11	UXM1097.D	03/09/2017	19:48
WS-BRS-A-030317	240-76348-12	UXM1098.D	03/09/2017	20:11
WS-SP1-A-030217	240-76348-13	UXM1099.D	03/09/2017	20:35
WS-SP1A-A-030317	240-76348-14	UXM1100.D	03/09/2017	20:58
WS-ELS-A-030317	240-76348-15	UXM1101.D	03/09/2017	21:21
TB-030317	240-76348-16	UXM1102.D	03/09/2017	21:44
WS-SP1A-A-030317 MS	240-76348-14 MS	UXM1103.D	03/09/2017	22:07
WS-SP1A-A-030317 MSD	240-76348-14 MSD	UXM1104.D	03/09/2017	22:30

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: CCVIS 240-269898/4 Calibration Date: 03/09/2017 14:24

Instrument ID: A3UX16 Calib Start Date: 03/08/2017 10:00

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 11:56

Lab File ID: UXM1084.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Lin1		0.2745	0.1000	0.0201	0.0200	0.5	20.0
Chloromethane	Ave	0.3946	0.3994	0.1000	0.0202	0.0200	1.2	20.0
Vinyl chloride	Ave	0.3777	0.3709	0.1000	0.0196	0.0200	-1.8	20.0
Butadiene	Ave	0.3394	0.3351		0.0197	0.0200	-1.3	20.0
Bromomethane	Ave	0.1948	0.2067	0.0500	0.0212	0.0200	6.1	20.0
Chloroethane	Ave	0.2174	0.2283	0.0500	0.0210	0.0200	5.0	20.0
Dichlorofluoromethane	Ave	0.5046	0.5203		0.0206	0.0200	3.1	20.0
Trichlorofluoromethane	Ave	0.3118	0.3536	0.1000	0.0227	0.0200	13.4	20.0
Ethyl ether	Ave	0.2225	0.2130		0.0191	0.0200	-4.3	20.0
Acrolein	Ave	0.0275	0.0297		0.108	0.100	7.9	50.0
1,1-Dichloroethene	Ave	0.2718	0.2568	0.1000	0.0189	0.0200	-5.5	20.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.1658	0.1727	0.0500	0.0208	0.0200	4.1	20.0
Acetone	Lin1		0.0771	0.0100	0.0376	0.0400	-6.0	50.0
Iodomethane	Ave	0.4190	0.4183		0.0200	0.0200	-0.2	20.0
Carbon disulfide	Ave	0.9260	0.9122	0.1000	0.0197	0.0200	-1.5	20.0
3-Chloro-1-propene	Ave	0.1951	0.1971		0.0202	0.0200	1.0	20.0
Methyl acetate	Ave	0.1453	0.1278	0.1000	0.0880	0.100	-12.0	20.0
Methylene Chloride	Ave	0.3244	0.3057	0.1000	0.0188	0.0200	-5.8	50.0
2-Methyl-2-propanol	Ave	0.0169	0.0142		0.168	0.200	-16.1	50.0
Acrylonitrile	Ave	0.0788	0.0707		0.179	0.200	-10.3	20.0
Methyl tert-butyl ether	Ave	0.7175	0.6710	0.1000	0.0187	0.0200	-6.5	20.0
trans-1,2-Dichloroethene	Ave	0.3207	0.2967	0.1000	0.0185	0.0200	-7.5	20.0
Hexane	Ave	0.2862	0.2702		0.0189	0.0200	-5.6	20.0
1,1-Dichloroethane	Ave	0.5155	0.5199	0.2000	0.0202	0.0200	0.9	20.0
Vinyl acetate	Ave	0.4080	0.3632		0.0178	0.0200	-11.0	50.0
cis-1,2-Dichloroethene	Ave	0.3319	0.3223	0.1000	0.0194	0.0200	-2.9	20.0
2,2-Dichloropropane	Ave	0.3523	0.3667		0.0208	0.0200	4.1	20.0
2-Butanone (MEK)	Ave	0.0975	0.0793	0.0100	0.0325	0.0400	-18.7	20.0
Chlorobromomethane	Ave	0.1354	0.1370		0.0202	0.0200	1.2	20.0
Tetrahydrofuran	Ave	0.0509	0.0463		0.0363	0.0400	-9.2	20.0
Chloroform	Ave	0.4653	0.4724	0.2000	0.0203	0.0200	1.5	20.0
1,1,1-Trichloroethane	Ave	0.3853	0.3888	0.1000	0.0202	0.0200	0.9	20.0
Cyclohexane	Ave	0.4495	0.4414	0.1000	0.0196	0.0200	-1.8	20.0
1,1-Dichloropropene	Ave	0.4011	0.3654		0.0182	0.0200	-8.9	20.0
Carbon tetrachloride	Ave	0.3114	0.3252	0.1000	0.0209	0.0200	4.5	20.0
Isobutyl alcohol	Ave	0.0054	0.0049		0.451	0.500	-9.8	20.0
Benzene	Ave	1.149	1.134	0.5000	0.0197	0.0200	-1.3	20.0
1,2-Dichloroethane	Ave	0.3181	0.3079	0.1000	0.0194	0.0200	-3.2	20.0
n-Heptane	Lin1		0.1353		0.0180	0.0200	-9.8	20.0
Trichloroethene	Ave	0.2904	0.2748	0.1500	0.0189	0.0200	-5.4	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: CCVIS 240-269898/4 Calibration Date: 03/09/2017 14:24

Instrument ID: A3UX16 Calib Start Date: 03/08/2017 10:00

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 11:56

Lab File ID: UXM1084.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Methylcyclohexane	Ave	0.3646	0.3691	0.1000	0.0203	0.0200	1.3	20.0
1,2-Dichloropropane	Ave	0.2586	0.2686	0.1000	0.0208	0.0200	3.9	20.0
Dibromomethane	Ave	0.1366	0.1268		0.0186	0.0200	-7.2	20.0
1,4-Dioxane	Ave	0.0019	0.0018		0.375	0.400	-6.1	50.0
Dichlorobromomethane	Ave	0.3083	0.3135	0.1500	0.0203	0.0200	1.7	20.0
2-Chloroethyl vinyl ether	Ave	0.1217	0.1162		0.0382	0.0400	-4.5	20.0
cis-1,3-Dichloropropene	Ave	0.4173	0.4125	0.1500	0.0198	0.0200	-1.1	20.0
4-Methyl-2-pentanone (MIBK)	Ave	0.1775	0.1564	0.0500	0.0352	0.0400	-11.9	20.0
Toluene	Ave	1.569	1.521	0.4000	0.0194	0.0200	-3.1	20.0
trans-1,3-Dichloropropene	Ave	0.4735	0.4498	0.1000	0.0190	0.0200	-5.0	20.0
Ethyl methacrylate	Ave	0.3739	0.3541		0.0189	0.0200	-5.3	20.0
1,1,2-Trichloroethane	Ave	0.2514	0.2378	0.1000	0.0189	0.0200	-5.4	20.0
Tetrachloroethene	Ave	0.2715	0.2585	0.1500	0.0190	0.0200	-4.8	20.0
1,3-Dichloropropane	Ave	0.4833	0.4626		0.0191	0.0200	-4.3	20.0
2-Hexanone	Ave	0.1871	0.1685	0.0500	0.0360	0.0400	-10.0	20.0
Chlorodibromomethane	Ave	0.2804	0.2816		0.0201	0.0200	0.4	20.0
Ethylene Dibromide	Ave	0.2542	0.2320		0.0183	0.0200	-8.7	20.0
Chlorobenzene	Ave	1.019	0.9757	0.3000	0.0192	0.0200	-4.2	20.0
1,1,1,2-Tetrachloroethane	Ave	0.3365	0.3477		0.0207	0.0200	3.3	20.0
Ethylbenzene	Ave	0.5389	0.5355		0.0199	0.0200	-0.6	20.0
m-Xylene & p-Xylene	Ave	0.6815	0.6634		0.0195	0.0200	-2.7	20.0
o-Xylene	Ave	0.6870	0.6912		0.0201	0.0200	0.6	20.0
Styrene	Ave	1.151	1.137	0.3000	0.0198	0.0200	-1.2	20.0
Bromoform	Ave	0.1585	0.1623	0.1000	0.0205	0.0200	2.4	20.0
Isopropylbenzene	Ave	1.634	1.651	0.1000	0.0202	0.0200	1.0	20.0
1,1,2,2-Tetrachloroethane	Ave	0.5763	0.5768	0.3000	0.0200	0.0200	0.0	20.0
Bromobenzene	Ave	0.7422	0.7387		0.0199	0.0200	-0.5	20.0
1,2,3-Trichloropropane	Ave	0.1646	0.1643		0.0200	0.0200	-0.2	20.0
trans-1,4-Dichloro-2-butene	Ave	0.1326	0.1474		0.0222	0.0200	11.2	20.0
N-Propylbenzene	Ave	0.7686	0.8284		0.0216	0.0200	7.8	20.0
2-Chlorotoluene	Ave	0.6871	0.7429		0.0216	0.0200	8.1	20.0
1,3,5-Trimethylbenzene	Ave	2.409	2.493		0.0207	0.0200	3.5	20.0
4-Chlorotoluene	Ave	0.7390	0.7363		0.0199	0.0200	-0.4	20.0
tert-Butylbenzene	Ave	2.120	2.019		0.0191	0.0200	-4.7	20.0
1,2,4-Trimethylbenzene	Ave	2.556	2.571		0.0201	0.0200	0.6	20.0
sec-Butylbenzene	Ave	2.700	2.633		0.0195	0.0200	-2.5	20.0
1,3-Dichlorobenzene	Ave	1.389	1.369	0.6000	0.0197	0.0200	-1.4	20.0
4-Isopropyltoluene	Ave	2.363	2.345		0.0198	0.0200	-0.8	20.0
1,4-Dichlorobenzene	Ave	1.458	1.383	0.5000	0.0190	0.0200	-5.1	20.0
n-Butylbenzene	Ave	1.955	1.897		0.0194	0.0200	-2.9	20.0
1,2-Dichlorobenzene	Ave	1.317	1.266	0.4000	0.0192	0.0200	-3.9	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Lab Sample ID: CCVIS 240-269898/4 Calibration Date: 03/09/2017 14:24

Instrument ID: A3UX16 Calib Start Date: 03/08/2017 10:00

GC Column: DB-624 ID: 0.18(mm) Calib End Date: 03/08/2017 11:56

Lab File ID: UXM1084.D Conc. Units: ng/uL Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2-Dibromo-3-Chloropropane	Ave	0.0883	0.0850	0.0500	0.0193	0.0200	-3.7	50.0
1,2,4-Trichlorobenzene	Ave	0.6658	0.6344	0.2000	0.0191	0.0200	-4.7	50.0
Hexachlorobutadiene	Ave	0.2923	0.2533		0.0173	0.0200	-13.4	20.0
Naphthalene	Ave	1.417	1.247		0.0176	0.0200	-12.0	50.0
1,2,3-Trichlorobenzene	Ave	0.4974	0.4803		0.0193	0.0200	-3.5	20.0
Dibromofluoromethane (Surr)	Ave	0.2319	0.2366		0.0204	0.0200	2.0	20.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.2489	0.2417		0.0194	0.0200	-2.9	20.0
Toluene-d8 (Surr)	Ave	1.333	1.336		0.0201	0.0200	0.3	20.0
4-Bromofluorobenzene (Surr)	Ave	0.4845	0.5150		0.0213	0.0200	6.3	20.0

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Sample No.: STD8260 240-269659/4 Date Analyzed: 03/08/2017 13:29

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm)

Lab File ID (Standard): UXJ0661A.D Heated Purge: (Y/N) N

Calibration ID: 38704

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		1095553	5.04	777468	7.70	357308	9.94
UPPER LIMIT		2191106	5.54	1554936	8.20	714616	10.44
LOWER LIMIT		547777	4.54	388734	7.20	178654	9.44
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 240-269659/20		1020521	5.04	727325	7.70	341110	9.94
ICV 240-269659/21		994001	5.04	715931	7.70	316924	9.94
CCVIS 240-269880/2		1017475	5.04	745392	7.70	346157	9.94

FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260C

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Sample No.: CCVIS 240-269880/2 Date Analyzed: 03/09/2017 11:31

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm)

Lab File ID (Standard): UXJ0682.D Heated Purge: (Y/N) N

Calibration ID: 38708

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1017475	5.04	745392	7.70	346157	9.94
UPPER LIMIT		2034950	5.54	1490784	8.20	692314	10.44
LOWER LIMIT		508738	4.54	372696	7.20	173079	9.44
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 240-269880/3		999858	5.04	707519	7.70	312972	9.94
MB 240-269880/6		901888	5.04	665335	7.70	292492	9.94
240-76348-1	WS-SD1-A-030217	872779	5.04	634804	7.70	285380	9.94
240-76348-2	WS-SD2-A-030217	860613	5.04	635815	7.70	283162	9.94
200-37604-B-2 MS		903766	5.04	669231	7.70	304079	9.94
200-37604-B-2 MSD		927030	5.04	676304	7.70	308674	9.94

FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260C

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Sample No.: ICIS 240-265930/11 Date Analyzed: 02/08/2017 12:27

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm)

Lab File ID (Standard): UXM0698.D Heated Purge: (Y/N) N

Calibration ID: 38230

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		949364	5.25	718358	7.93	402378	10.16
UPPER LIMIT		1898728	5.75	1436716	8.43	804756	10.66
LOWER LIMIT		474682	4.75	359179	7.43	201189	9.66
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 240-265930/23		897837	5.25	665536	7.93	355800	10.16

FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260C

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Sample No.: ICIS 240-269649/11 Date Analyzed: 03/08/2017 11:10

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm)

Lab File ID (Standard): UXM1072.D Heated Purge: (Y/N) N

Calibration ID: 38701

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		986646	5.25	713182	7.93	395520	10.16
UPPER LIMIT		1973292	5.75	1426364	8.43	791040	10.66
LOWER LIMIT		493323	4.75	356591	7.43	197760	9.66
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 240-269649/22		982675	5.24	673177	7.92	383684	10.16
CCVIS 240-269898/4		1018333	5.25	746918	7.93	389074	10.16

FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260C

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Sample No.: CCVIS 240-269898/4 Date Analyzed: 03/09/2017 14:24

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm)

Lab File ID (Standard): UXM1084.D Heated Purge: (Y/N) N

Calibration ID: 38701

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1018333	5.25	746918	7.93	389074	10.16
UPPER LIMIT		2036666	5.75	1493836	8.43	778148	10.66
LOWER LIMIT		509167	4.75	373459	7.43	194537	9.66
LAB SAMPLE ID	CLIENT SAMPLE ID						
LCS 240-269898/5		991736	5.25	736176	7.93	416311	10.16
CCV 240-269898/6		960479	5.24	693738	7.93	386958	10.16
MB 240-269898/8		932759	5.25	687304	7.93	371651	10.16
240-76348-3	WS-SD3-A-030217	947867	5.25	697238	7.93	388544	10.16
240-76348-4	WS-HRS1-A-030217	951609	5.25	717632	7.93	388053	10.16
240-76348-5	WS-HRS2-A-030217	906765	5.25	684325	7.93	369832	10.16
240-76348-6	WS-HRS3-A-030217	923968	5.25	704386	7.93	381496	10.16
240-76348-7	WS-HRS4-A-030217	905826	5.25	691860	7.93	372867	10.16
240-76348-8	WS-HRS5-A-030217	889609	5.25	674893	7.93	380774	10.16
240-76348-9	WS-HRS6-A-030217	938966	5.25	706003	7.93	388912	10.16
240-76348-10	WS-HRS7-A-030217	973585	5.25	732415	7.93	387379	10.16
240-76348-11	WS-LS5-A-030217	838208	5.25	604669	7.93	364274	10.16
240-76348-12	WS-BRS-A-030317	919125	5.25	684355	7.93	377936	10.16
240-76348-13	WS-SP1-A-030217	938657	5.25	714250	7.92	369025	10.16
240-76348-14	WS-SP1A-A-030317	921024	5.25	631178	7.93	379236	10.16
240-76348-15	WS-ELS-A-030317	972293	5.24	699610	7.92	388117	10.16
240-76348-16	TB-030317	976778	5.25	672284	7.92	362176	10.16
240-76348-14 MS	WS-SP1A-A-030317 MS	897470	5.25	649765	7.92	364859	10.16
240-76348-14 MSD	WS-SP1A-A-030317 MSD	916292	5.24	652922	7.92	361250	10.16

FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260C

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 12:44 Calibration End Date: 03/08/2017 14:37 Calibration ID: 38704

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD8260 240-269659/7	UXJ0664A.D
Level 2	STD8260 240-269659/6	UXJ0663A.D
Level 3	STD8260 240-269659/5	UXJ0662A.D
Level 4	STD8260 240-269659/4	UXJ0661A.D
Level 5	STD8260 240-269659/3	UXJ0660A.D
Level 6	STD8260 240-269659/2	UXJ0659A.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Dichlorodifluoromethane	0.2462 0.1560	0.2478	0.2370	0.2011	0.1963	Ave		0.2141			0.1000	16.9		20.0			
Chloromethane	0.2563 0.1995	0.2850	0.2625	0.2609	0.2369	Ave		0.2502			0.1000	11.7		20.0			
Vinyl chloride	0.2708 0.2056	0.2865	0.2668	0.2588	0.2408	Ave		0.2549			0.1000	11.1		20.0			
Butadiene	0.2690 0.1943	0.2982	0.2727	0.2624	0.2461	Ave		0.2571				13.7		20.0			
Bromomethane	0.1150 0.0945	0.1255	0.1153	0.1161	0.1099	Ave		0.1127			0.0500	9.1		20.0			
Chloroethane	0.1096 0.0967	0.1194	0.1156	0.1170	0.1125	Ave		0.1118			0.0500	7.3		20.0			
Dichlorofluoromethane	0.2974 0.2479	0.2913	0.2828	0.2884	0.2802	Ave		0.2813				6.2		20.0			
Trichlorofluoromethane	0.2726 0.2385	0.2884	0.2800	0.2653	0.2718	Ave		0.2694			0.1000	6.4		20.0			
Ethyl ether	0.2513 0.2116	0.2485	0.2597	0.2597	0.2440	Ave		0.2458				7.3		20.0			
Acrolein	0.0346 0.0259	0.0316	0.0329	0.0307	0.0278	Ave		0.0306				10.5		20.0			
1,1-Dichloroethene	0.3225 0.2439	0.2877	0.3013	0.2950	0.2692	Ave		0.2866			0.1000	9.5		20.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	0.1443 0.1197	0.1272	0.1637	0.1360	0.1339	Ave		0.1374			0.0500	11.1		20.0			
Acetone	0.1286 0.0839	0.1407	0.1232	0.1010	0.1002	Ave		0.1129			0.0100	18.9		20.0			
Iodomethane	0.4329 0.3649	0.4273	0.4079	0.4275	0.3972	Ave		0.4096				6.3		20.0			
Carbon disulfide	0.7266 0.6698	0.7039	0.7560	0.7552	0.7132	Ave		0.7208			0.1000	4.6		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 12:44 Calibration End Date: 03/08/2017 14:37 Calibration ID: 38704

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
3-Chloro-1-propene	0.1846 0.2018	0.2299	0.2158	0.2157	0.2146	Ave		0.2104				7.3		20.0			
Methyl acetate	0.1947 0.1533	0.1726	0.1799	0.1695	0.1646	Ave		0.1724			0.1000	8.2		20.0			
Methylene Chloride	0.4442 0.2672	0.3591	0.3238	0.3148	0.2989	Ave		0.3347			0.1000	18.4		20.0			
2-Methyl-2-propanol	0.0193 0.0108	0.0172	0.0163	0.0148	0.0139	Ave		0.0154				18.9		20.0			
Acrylonitrile	0.0871 0.0740	0.0822	0.0854	0.0796	0.0769	Ave		0.0809				6.2		20.0			
Methyl tert-butyl ether	0.8282 0.7576	0.8225	0.8144	0.8204	0.8045	Ave		0.8079			0.1000	3.2		20.0			
trans-1,2-Dichloroethene	0.3127 0.2957	0.3454	0.3245	0.3235	0.3204	Ave		0.3204			0.1000	5.1		20.0			
Hexane	0.0852 0.0648	0.0615	0.0840	0.0659	0.0671	Ave		0.0714				14.6		20.0			
1,1-Dichloroethane	0.5655 0.5209	0.5598	0.5672	0.5629	0.5530	Ave		0.5549			0.2000	3.1		20.0			
Vinyl acetate	0.5610 0.5334	0.5313	0.5389	0.5487	0.5587	Ave		0.5453				2.3		20.0			
cis-1,2-Dichloroethene	0.3748 0.3145	0.3395	0.3356	0.3394	0.3365	Ave		0.3400			0.1000	5.7		20.0			
2-Butanone (MEK)	0.1347 0.1105	0.1365	0.1255	0.1094	0.1125	Ave		0.1215			0.0100	10.2		20.0			
2,2-Dichloropropane	0.3348 0.3071	0.3209	0.3477	0.3402	0.3356	Ave		0.3311				4.4		20.0			
Chlorobromomethane	0.1486 0.1466	0.1442	0.1486	0.1506	0.1524	Ave		0.1485				1.9		20.0			
Tetrahydrofuran	0.0665 0.0591	0.0634	0.0618	0.0595	0.0592	Ave		0.0616				4.8		20.0			
Chloroform	0.5373 0.5058	0.5246	0.5295	0.5393	0.5247	Ave		0.5269			0.2000	2.3		20.0			
1,1,1-Trichloroethane	0.4233 0.3851	0.3906	0.4095	0.4098	0.4059	Ave		0.4040			0.1000	3.5		20.0			
Cyclohexane	0.4378 0.3798	0.3744	0.4557	0.3857	0.3913	Ave		0.4041			0.1000	8.4		20.0			
1,1-Dichloropropene	0.4178 0.3958	0.3895	0.4183	0.4073	0.4102	Ave		0.4065				2.9		20.0			
Carbon tetrachloride	0.2532 0.3103	0.2364	0.2942	0.2938	0.3100	Ave		0.2830			0.1000	10.9		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 12:44 Calibration End Date: 03/08/2017 14:37 Calibration ID: 38704

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Isobutyl alcohol	0.0082 0.0059	0.0078	0.0081	0.0069	0.0070	Ave		0.0073				12.1		20.0			
1,2-Dichloroethane	0.4212 0.4040	0.4130	0.4037	0.4157	0.4202	Ave		0.4129			0.1000	1.9		20.0			
Benzene	1.2150 1.2100	1.2165	1.2017	1.2267	1.2288	Ave		1.2165			0.5000	0.8		20.0			
n-Heptane	0.0820 0.0601	0.0759	0.0820	0.0582	0.0592	Ave		0.0696				16.7		20.0			
Trichloroethene	0.3250 0.3110	0.3015	0.3184	0.3184	0.3165	Ave		0.3151			0.1500	2.6		20.0			
Methylcyclohexane	0.3921 0.3586	0.3495	0.4379	0.3500	0.3636	Ave		0.3753			0.1000	9.2		20.0			
1,2-Dichloropropane	0.2858 0.2910	0.2891	0.2874	0.2942	0.2914	Ave		0.2898			0.1000	1.0		20.0			
Dibromomethane	0.1561 0.1604	0.1603	0.1663	0.1614	0.1600	Ave		0.1608				2.1		20.0			
1,4-Dioxane	0.0012 0.0010	0.0017	0.0019	0.0020	0.0016	Qua	-0.023	0.0024	-0.000002						0.9990		0.9900
Dichlorobromomethane	0.3157 0.3525	0.3165	0.3222	0.3404	0.3471	Ave		0.3324			0.1500	4.9		20.0			
2-Chloroethyl vinyl ether	0.1668 0.1574	0.1549	0.1573	0.1569	0.1555	Ave		0.1581				2.8		20.0			
cis-1,3-Dichloropropene	0.4129 0.4595	0.4139	0.4274	0.4447	0.4602	Ave		0.4364			0.1500	4.9		20.0			
4-Methyl-2-pentanone (MIBK)	0.2181 0.2214	0.2155	0.2144	0.2044	0.2128	Ave		0.2144			0.0500	2.7		20.0			
Toluene	1.8435 1.9094	1.7647	1.7341	1.8177	1.8825	Ave		1.8253			0.4000	3.7		20.0			
trans-1,3-Dichloropropene	0.5210 0.5919	0.5116	0.5185	0.5516	0.5808	Ave		0.5459			0.1000	6.3		20.0			
Ethyl methacrylate	0.4298 0.4840	0.4278	0.4299	0.4459	0.4675	Ave		0.4475				5.2		20.0			
1,1,2-Trichloroethane	0.3203 0.3203	0.2685	0.2954	0.3115	0.3204	Ave		0.3061			0.1000	6.8		20.0			
Tetrachloroethene	0.3637 0.3403	0.3066	0.3168	0.3253	0.3330	Ave		0.3310			0.1500	6.0		20.0			
1,3-Dichloropropane	0.5954 0.5937	0.5823	0.5626	0.5759	0.5933	Ave		0.5839				2.2		20.0			
2-Hexanone	0.1967 0.2603	0.2326	0.2327	0.2233	0.2443	Ave		0.2316			0.0500	9.2		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 12:44 Calibration End Date: 03/08/2017 14:37 Calibration ID: 38704

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Chlorodibromomethane	0.2314 0.3237	0.2441	0.2682	0.2847	0.3045	Ave		0.2761				12.8		20.0			
Ethylene Dibromide	0.3030 0.3039	0.2920	0.2903	0.2910	0.3031	Ave		0.2972				2.3		20.0			
Chlorobenzene	1.0643 1.0580	1.0393	1.0366	1.0776	1.0957	Ave		1.0619			0.3000	2.1		20.0			
1,1,1,2-Tetrachloroethane	0.2864 0.3647	0.3222	0.3249	0.3447	0.3656	Ave		0.3347				9.0		20.0			
Ethylbenzene	0.5987 0.6017	0.5825	0.5573	0.5880	0.6030	Ave		0.5885				2.9		20.0			
m-Xylene & p-Xylene	0.6920 0.7450	0.6820	0.6905	0.7118	0.7347	Ave		0.7093				3.6		20.0			
o-Xylene	0.6972 0.6991	0.6409	0.6614	0.6806	0.7045	Ave		0.6806				3.7		20.0			
Styrene	1.1395 1.2638	1.0895	1.1331	1.1713	1.2423	Ave		1.1732			0.3000	5.7		20.0			
Bromoform	0.1018 0.1562	0.1113	0.1178	0.1274	0.1416	Ave		0.1260			0.1000	16.0		20.0			
Isopropylbenzene	1.5256 1.6425	1.4835	1.5564	1.6131	1.6668	Ave		1.5813			0.1000	4.5		20.0			
1,1,2,2-Tetrachloroethane	0.6353 0.6380	0.6834	0.6753	0.6677	0.6605	Ave		0.6600			0.3000	3.0		20.0			
Bromobenzene	0.9310 0.8690	0.9422	0.9165	0.9135	0.9123	Ave		0.9141				2.7		20.0			
1,2,3-Trichloropropane	0.2088 0.2175	0.2462	0.2475	0.2229	0.2311	Ave		0.2290				6.8		20.0			
trans-1,4-Dichloro-2-butene	0.0856 0.1530	0.0992	0.1063	0.1200	0.1306	Lin1	-0.093	0.1450							0.9910		0.9900
N-Propylbenzene	0.8993 0.8871	0.9457	0.9131	0.9251	0.9355	Ave		0.9176				2.4		20.0			
2-Chlorotoluene	0.7885 0.7753	0.8374	0.8019	0.8137	0.8129	Ave		0.8050				2.7		20.0			
1,3,5-Trimethylbenzene	2.3652 2.5521	2.4382	2.5754	2.6014	2.6287	Ave		2.5268				4.1		20.0			
4-Chlorotoluene	0.8575 0.8669	0.8622	0.8499	0.8700	0.8771	Ave		0.8639				1.1		20.0			
tert-Butylbenzene	2.2899 2.0791	2.0627	2.1725	2.1790	2.1420	Ave		2.1542				3.8		20.0			
1,2,4-Trimethylbenzene	2.4685 2.6169	2.5175	2.6895	2.6556	2.7220	Ave		2.6117				3.8		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 12:44 Calibration End Date: 03/08/2017 14:37 Calibration ID: 38704

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
sec-Butylbenzene	2.6365 2.7362	2.6348	2.8553	2.8006	2.8242	Ave		2.7479				3.5		20.0			
1,3-Dichlorobenzene	1.4308 1.4267	1.5158	1.4746	1.4786	1.5055	Ave		1.4720			0.6000	2.5		20.0			
4-Isopropyltoluene	2.1502 2.3350	2.2685	2.3388	2.3609	2.4359	Ave		2.3149				4.2		20.0			
1,4-Dichlorobenzene	1.5374 1.4928	1.5668	1.5296	1.5207	1.5542	Ave		1.5336			0.5000	1.7		20.0			
n-Butylbenzene	1.6941 1.7491	1.7760	1.8641	1.8674	1.8642	Ave		1.8025				4.1		20.0			
1,2-Dichlorobenzene	1.2744 1.2780	1.3249	1.3247	1.3312	1.3359	Ave		1.3115			0.4000	2.1		20.0			
1,2-Dibromo-3-Chloropropane	0.0698 0.0724	0.0683	0.0844	0.0804	0.0782	Ave		0.0756			0.0500	8.5		20.0			
1,2,4-Trichlorobenzene	0.5438 0.4544	0.6016	0.5776	0.5346	0.5300	Ave		0.5403			0.2000	9.3		20.0			
Hexachlorobutadiene	0.2595 0.1799	0.2246	0.2425	0.2352	0.2206	Ave		0.2270				11.9		20.0			
Naphthalene	1.2807 1.0845	1.3410	1.3160	1.2703	1.2286	Ave		1.2535				7.3		20.0			
1,2,3-Trichlorobenzene	0.4855 0.3901	0.5379	0.4898	0.4779	0.4415	Ave		0.4705				10.6		20.0			
Dibromofluoromethane (Surr)	0.2496 0.2583	0.2676	0.2584	0.2607	0.2560	Ave		0.2584				2.3		20.0			
1,2-Dichloroethane-d4 (Surr)	0.3156 0.3383	0.3299	0.3335	0.3376	0.3315	Ave		0.3310				2.5		20.0			
Toluene-d8 (Surr)	1.4089 1.5607	1.4807	1.4289	1.5008	1.4847	Ave		1.4775				3.7		20.0			
4-Bromofluorobenzene (Surr)	0.4326 0.4743	0.4549	0.4311	0.4533	0.4610	Ave		0.4512				3.7		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 12:44 Calibration End Date: 03/08/2017 14:37 Calibration ID: 38704

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD8260 240-269659/7	UXJ0664A.D
Level 2	STD8260 240-269659/6	UXJ0663A.D
Level 3	STD8260 240-269659/5	UXJ0662A.D
Level 4	STD8260 240-269659/4	UXJ0661A.D
Level 5	STD8260 240-269659/3	UXJ0660A.D
Level 6	STD8260 240-269659/2	UXJ0659A.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Dichlorodifluoromethane	FB	Ave	26162 891893	49194	125846	220363	474253	1.00 40.0	2.00	5.00	10.0	20.0
Chloromethane	FB	Ave	27233 1140387	56585	139377	285839	572410	1.00 40.0	2.00	5.00	10.0	20.0
Vinyl chloride	FB	Ave	28781 1175428	56869	141636	283554	581954	1.00 40.0	2.00	5.00	10.0	20.0
Butadiene	FB	Ave	28584 1110763	59190	144782	287516	594713	1.00 40.0	2.00	5.00	10.0	20.0
Bromomethane	FB	Ave	12221 540261	24906	61195	127218	265640	1.00 40.0	2.00	5.00	10.0	20.0
Chloroethane	FB	Ave	11649 552630	23706	61389	128189	271795	1.00 40.0	2.00	5.00	10.0	20.0
Dichlorofluoromethane	FB	Ave	31608 1417470	57824	150166	315995	677045	1.00 40.0	2.00	5.00	10.0	20.0
Trichlorofluoromethane	FB	Ave	28969 1363529	57258	148661	290603	656628	1.00 40.0	2.00	5.00	10.0	20.0
Ethyl ether	FB	Ave	26707 1209608	49333	137906	284543	589674	1.00 40.0	2.00	5.00	10.0	20.0
Acrolein	FB	Ave	18407 741525	31365	87369	168350	336222	5.00 200	10.0	25.0	50.0	100
1,1-Dichloroethene	FB	Ave	34270 1394442	57106	159943	323214	650355	1.00 40.0	2.00	5.00	10.0	20.0
1,1,2-Trichloro-1,2,2-trifluoroetha ne	FB	Ave	15332 684207	25244	86911	148964	323494	1.00 40.0	2.00	5.00	10.0	20.0
Acetone	FB	Ave	27327 959062	55860	130822	221213	484158	2.00 80.0	4.00	10.0	20.0	40.0
Iodomethane	FB	Ave	46002 2086225	84821	216579	468316	959649	1.00 40.0	2.00	5.00	10.0	20.0
Carbon disulfide	FB	Ave	77217 3829626	139740	401387	827345	1723173	1.00 40.0	2.00	5.00	10.0	20.0
3-Chloro-1-propene	FB	Ave	19617 1153792	45634	114571	236347	518550	1.00 40.0	2.00	5.00	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 12:44 Calibration End Date: 03/08/2017 14:37 Calibration ID: 38704

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Methyl acetate	FB	Ave	103473 4382614	171284	477594	928237	1989162	5.00 200	10.0	25.0	50.0	100
Methylene Chloride	FB	Ave	47205 1527975	71293	171888	344883	722112	1.00 40.0	2.00	5.00	10.0	20.0
2-Methyl-2-propanol	FB	Ave	20508 620236	34170	86536	162293	336566	10.0 400	20.0	50.0	100	200
Acrylonitrile	FB	Ave	92597 4230786	163157	453358	872606	1858267	10.0 400	20.0	50.0	100	200
Methyl tert-butyl ether	FB	Ave	88013 4331686	163290	432401	898844	1943791	1.00 40.0	2.00	5.00	10.0	20.0
trans-1,2-Dichloroethene	FB	Ave	33232 1690732	68576	172303	354438	774109	1.00 40.0	2.00	5.00	10.0	20.0
Hexane	FB	Ave	9057 370346	12218	44597	72166	162130	1.00 40.0	2.00	5.00	10.0	20.0
1,1-Dichloroethane	FB	Ave	60094 2978090	111132	301150	616683	1336251	1.00 40.0	2.00	5.00	10.0	20.0
Vinyl acetate	FB	Ave	59620 3049819	105480	286121	601077	1350042	1.00 40.0	2.00	5.00	10.0	20.0
cis-1,2-Dichloroethene	FB	Ave	39827 1798304	67392	178187	371798	813086	1.00 40.0	2.00	5.00	10.0	20.0
2-Butanone (MEK)	FB	Ave	28636 1263870	54192	133234	239734	543659	2.00 80.0	4.00	10.0	20.0	40.0
2,2-Dichloropropane	FB	Ave	35583 1755810	63707	184598	372751	810830	1.00 40.0	2.00	5.00	10.0	20.0
Chlorobromomethane	FB	Ave	15792 838375	28630	78904	165041	368158	1.00 40.0	2.00	5.00	10.0	20.0
Tetrahydrofuran	FB	Ave	14135 675428	25160	65577	130275	286067	2.00 80.0	4.00	10.0	20.0	40.0
Chloroform	FB	Ave	57099 2891871	104147	281139	590807	1267908	1.00 40.0	2.00	5.00	10.0	20.0
1,1,1-Trichloroethane	FB	Ave	44989 2201888	77545	217403	448965	980807	1.00 40.0	2.00	5.00	10.0	20.0
Cyclohexane	FB	Ave	46530 2171419	74331	241930	422508	945371	1.00 40.0	2.00	5.00	10.0	20.0
1,1-Dichloropropene	FB	Ave	44402 2262788	77323	222104	446209	991205	1.00 40.0	2.00	5.00	10.0	20.0
Carbon tetrachloride	FB	Ave	26904 1774300	46932	156187	321893	749090	1.00 40.0	2.00	5.00	10.0	20.0
Isobutyl alcohol	CBNZ d5	Ave	15589 589150	27749	77713	133908	295408	25.0 1000	50.0	125	250	500
1,2-Dichloroethane	FB	Ave	44758 2309651	81990	214343	455368	1015267	1.00 40.0	2.00	5.00	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 12:44 Calibration End Date: 03/08/2017 14:37 Calibration ID: 38704

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Benzene	FB	Ave	129125 6918202	241503	637988	1343892	2969233	1.00 40.0	2.00	5.00	10.0	20.0
n-Heptane	FB	Ave	8718 343558	15065	43559	63772	143041	1.00 40.0	2.00	5.00	10.0	20.0
Trichloroethene	FB	Ave	34537 1778305	59847	169059	348834	764731	1.00 40.0	2.00	5.00	10.0	20.0
Methylcyclohexane	FB	Ave	41669 2050442	69380	232514	383398	878670	1.00 40.0	2.00	5.00	10.0	20.0
1,2-Dichloropropane	FB	Ave	30377 1663791	57397	152575	322351	704128	1.00 40.0	2.00	5.00	10.0	20.0
Dibromomethane	FB	Ave	16586 917348	31816	88313	176838	386533	1.00 40.0	2.00	5.00	10.0	20.0
1,4-Dioxane	FB	Qua	2587 116582	6725	20473	44375	79282	20.0 800	40.0	100	200	400
Dichlorobromomethane	FB	Ave	33550 2015284	62823	171087	372977	838641	1.00 40.0	2.00	5.00	10.0	20.0
2-Chloroethyl vinyl ether	FB	Ave	35456 1800056	61506	167040	343680	751629	2.00 80.0	4.00	10.0	20.0	40.0
cis-1,3-Dichloropropene	FB	Ave	43878 2627386	82163	226899	487232	1112040	1.00 40.0	2.00	5.00	10.0	20.0
4-Methyl-2-pentanone (MIBK)	FB	Ave	46362 2531392	85578	227674	447803	1028550	2.00 80.0	4.00	10.0	20.0	40.0
Toluene	CBNZ d5	Ave	140179 7670309	251559	669004	1413232	3161611	1.00 40.0	2.00	5.00	10.0	20.0
trans-1,3-Dichloropropene	CBNZ d5	Ave	39616 2377789	72936	200046	428890	975542	1.00 40.0	2.00	5.00	10.0	20.0
Ethyl methacrylate	CBNZ d5	Ave	32683 1944268	60988	165866	346675	785209	1.00 40.0	2.00	5.00	10.0	20.0
1,1,2-Trichloroethane	CBNZ d5	Ave	24357 1286816	38269	113977	242173	538176	1.00 40.0	2.00	5.00	10.0	20.0
Tetrachloroethene	CBNZ d5	Ave	27655 1367202	43713	122213	252946	559249	1.00 40.0	2.00	5.00	10.0	20.0
1,3-Dichloropropane	CBNZ d5	Ave	45276 2385046	83013	217041	447773	996459	1.00 40.0	2.00	5.00	10.0	20.0
2-Hexanone	CBNZ d5	Ave	29906 2090969	66318	179549	347294	820495	2.00 80.0	4.00	10.0	20.0	40.0
Chlorodibromomethane	CBNZ d5	Ave	17596 1300351	34801	103468	221344	511374	1.00 40.0	2.00	5.00	10.0	20.0
Ethylene Dibromide	CBNZ d5	Ave	23036 1220669	41627	112009	226268	508991	1.00 40.0	2.00	5.00	10.0	20.0
Chlorobenzene	CBNZ d5	Ave	80929 4250059	148159	399905	837815	1840285	1.00 40.0	2.00	5.00	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 12:44 Calibration End Date: 03/08/2017 14:37 Calibration ID: 38704

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
1,1,1,2-Tetrachloroethane	CBNZ d5	Ave	21776 1465089	45937	125326	267966	613992	1.00 40.0	2.00	5.00	10.0	20.0
Ethylbenzene	CBNZ d5	Ave	45524 2417103	83032	214981	457166	1012819	1.00 40.0	2.00	5.00	10.0	20.0
m-Xylene & p-Xylene	CBNZ d5	Ave	52620 2992943	97217	266398	553387	1233929	1.00 40.0	2.00	5.00	10.0	20.0
o-Xylene	CBNZ d5	Ave	53012 2808482	91362	255166	529136	1183214	1.00 40.0	2.00	5.00	10.0	20.0
Styrene	CBNZ d5	Ave	86644 5076753	155315	437133	910685	2086394	1.00 40.0	2.00	5.00	10.0	20.0
Bromoform	CBNZ d5	Ave	7738 627338	15869	45432	99059	237788	1.00 40.0	2.00	5.00	10.0	20.0
Isopropylbenzene	CBNZ d5	Ave	116003 6598153	211483	600458	1254111	2799420	1.00 40.0	2.00	5.00	10.0	20.0
1,1,2,2-Tetrachloroethane	DCBd 4	Ave	22160 1267895	42764	115020	238558	526826	1.00 40.0	2.00	5.00	10.0	20.0
Bromobenzene	DCBd 4	Ave	32472 1726976	58958	156111	326392	727678	1.00 40.0	2.00	5.00	10.0	20.0
1,2,3-Trichloropropane	DCBd 4	Ave	7281 432223	15408	42158	79629	184350	1.00 40.0	2.00	5.00	10.0	20.0
trans-1,4-Dichloro-2-butene	DCBd 4	Lin1	2985 304034	6205	18101	42866	104150	1.00 40.0	2.00	5.00	10.0	20.0
N-Propylbenzene	DCBd 4	Ave	31365 1762835	59178	155529	330542	746182	1.00 40.0	2.00	5.00	10.0	20.0
2-Chlorotoluene	DCBd 4	Ave	27503 1540683	52404	136593	290732	648373	1.00 40.0	2.00	5.00	10.0	20.0
1,3,5-Trimethylbenzene	DCBd 4	Ave	82496 5071646	152571	438659	929489	2096663	1.00 40.0	2.00	5.00	10.0	20.0
4-Chlorotoluene	DCBd 4	Ave	29908 1722853	53951	144765	310871	699588	1.00 40.0	2.00	5.00	10.0	20.0
tert-Butylbenzene	DCBd 4	Ave	79868 4131836	129077	370041	778562	1708417	1.00 40.0	2.00	5.00	10.0	20.0
1,2,4-Trimethylbenzene	DCBd 4	Ave	86099 5200467	157535	458105	948863	2171058	1.00 40.0	2.00	5.00	10.0	20.0
sec-Butylbenzene	DCBd 4	Ave	91958 5437627	164877	486346	1000673	2252586	1.00 40.0	2.00	5.00	10.0	20.0
1,3-Dichlorobenzene	DCBd 4	Ave	49904 2835163	94855	251162	528298	1200800	1.00 40.0	2.00	5.00	10.0	20.0
4-Isopropyltoluene	DCBd 4	Ave	74996 4640330	141952	398361	843561	1942831	1.00 40.0	2.00	5.00	10.0	20.0
1,4-Dichlorobenzene	DCBd 4	Ave	53623 2966675	98047	260532	543362	1239608	1.00 40.0	2.00	5.00	10.0	20.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 12:44 Calibration End Date: 03/08/2017 14:37 Calibration ID: 38704

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
n-Butylbenzene	DCBd 4	Ave	59088 3476036	111136	317511	667231	1486846	1.00 40.0	2.00	5.00	10.0	20.0
1,2-Dichlorobenzene	DCBd 4	Ave	44448 2539775	82905	225627	475656	1065515	1.00 40.0	2.00	5.00	10.0	20.0
1,2-Dibromo-3-Chloropropane	DCBd 4	Ave	2435 143793	4273	14370	28721	62410	1.00 40.0	2.00	5.00	10.0	20.0
1,2,4-Trichlorobenzene	DCBd 4	Ave	18966 903084	37648	98378	191011	422703	1.00 40.0	2.00	5.00	10.0	20.0
Hexachlorobutadiene	DCBd 4	Ave	9050 357421	14054	41313	84040	175945	1.00 40.0	2.00	5.00	10.0	20.0
Naphthalene	DCBd 4	Ave	44669 2155143	83916	224158	453891	979933	1.00 40.0	2.00	5.00	10.0	20.0
1,2,3-Trichlorobenzene	DCBd 4	Ave	16934 775319	33660	83425	170773	352173	1.00 40.0	2.00	5.00	10.0	20.0
Dibromofluoromethane (Surr)	FB	Ave	26526 1476593	53117	137172	285611	618489	1.00 40.0	2.00	5.00	10.0	20.0
1,2-Dichloroethane-d4 (Surr)	FB	Ave	33535 1934131	65489	177051	369820	800895	1.00 40.0	2.00	5.00	10.0	20.0
Toluene-d8 (Surr)	CBNZ d5	Ave	107132 6269680	211084	551265	1166789	2493627	1.00 40.0	2.00	5.00	10.0	20.0
4-Bromofluorobenzene (Surr)	CBNZ d5	Ave	32893 1905142	64851	166317	352464	774180	1.00 40.0	2.00	5.00	10.0	20.0

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD
Qua = Quadratic ISTD

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 15:23 Calibration End Date: 03/08/2017 17:17 Calibration ID: 38706

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD1 240-269659/13	UXJ0671.D
Level 2	STD2 240-269659/12	UXJ0670.D
Level 3	STD3 240-269659/11	UXJ0669.D
Level 4	STD4 240-269659/10	UXJ0668.D
Level 5	STD5 240-269659/9	UXJ0667.D
Level 6	STD6 240-269659/8	UXJ0666A.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Acetonitrile	0.0244 0.0206	0.0221	0.0237	0.0210	0.0204	Ave		0.0220				7.7		20.0			
Isopropyl ether	0.3068 0.2783	0.2585	0.3252	0.2817	0.2664	Ave		0.2861				8.8		20.0			
2-Chloro-1,3-butadiene	0.5340 0.4937	0.4697	0.5626	0.4928	0.4747	Ave		0.5046				7.2		20.0			
Tert-butyl ethyl ether	0.9280 0.8995	0.8382	0.9840	0.8998	0.8334	Ave		0.8972				6.3		20.0			
Ethyl acetate	0.2549 0.2298	0.2169	0.2361	0.2198	0.2123	Ave		0.2283				6.9		20.0			
Propionitrile	0.0227 0.0252	0.0239	0.0259	0.0244	0.0235	Ave		0.0243				4.7		20.0			
Methacrylonitrile	0.1556 0.1657	0.1409	0.1662	0.1534	0.1492	Ave		0.1552				6.3		20.0			
Tert-amyl methyl ether	0.8385 0.8530	0.7280	0.8768	0.7987	0.7745	Ave		0.8116				6.8		20.0			
n-Butanol	0.0061 0.0039	0.0070	0.0056	0.0061	0.0056	Ave		0.0057				17.8		20.0			
Ethyl acrylate	0.3040 0.3169	0.2710	0.3073	0.2993	0.2947	Ave		0.2989				5.2		20.0			
Methyl methacrylate	0.2422 0.2425	0.2075	0.2379	0.2237	0.2244	Ave		0.2297				6.0		20.0			
2-Nitropropane	0.0529 0.0582	0.0453	0.0526	0.0548	0.0517	Ave		0.0526				8.1		20.0			
n-Butyl acetate	0.3542 0.3631	0.3205	0.3628	0.3359	0.3390	Ave		0.3459				4.9		20.0			
1-Chlorohexane	0.4764 0.4502	0.4329	0.4813	0.4221	0.4348	Ave		0.4496				5.4		20.0			
Cyclohexanone	0.0160 0.0098	0.0166	0.0163	0.0149	0.0140	Ave		0.0146				17.4		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 15:23 Calibration End Date: 03/08/2017 17:17 Calibration ID: 38706

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Pentachloroethane	0.1398 0.1784	0.1136	0.1563	0.1521	0.1583	Lin1	-0.141	0.1717							0.9950		0.9900
1,2,3-Trimethylbenzene	2.5349 2.6443	2.2214	2.8208	2.4366	2.4177	Ave		2.5126				8.2		20.0			
Benzyl chloride	0.1982 0.3075	0.1960	0.2324	0.2492	0.2745	Lin1	-0.168	0.2954							0.9940		0.9900
1,3,5-Trichlorobenzene	0.7023 0.6540	0.6007	0.7358	0.6283	0.6174	Ave		0.6564				8.0		20.0			
2-Methylnaphthalene	0.7617 0.8122	0.7665	0.8282	0.8242	0.7811	Ave		0.7957				3.7		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 15:23 Calibration End Date: 03/08/2017 17:17 Calibration ID: 38706

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD1 240-269659/13	UXJ0671.D
Level 2	STD2 240-269659/12	UXJ0670.D
Level 3	STD3 240-269659/11	UXJ0669.D
Level 4	STD4 240-269659/10	UXJ0668.D
Level 5	STD5 240-269659/9	UXJ0667.D
Level 6	STD6 240-269659/8	UXJ0666A.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Acetonitrile	FB	Ave	22831 935713	45514	112603	224194	457934	10.0 400	20.0	50.0	100	200
Isopropyl ether	FB	Ave	28653 1265405	53306	154203	301391	596564	1.00 40.0	2.00	5.00	10.0	20.0
2-Chloro-1,3-butadiene	FB	Ave	49878 2244610	96870	266768	527354	1063142	1.00 40.0	2.00	5.00	10.0	20.0
Tert-butyl ethyl ether	FB	Ave	86676 4089575	172876	466562	962825	1866359	1.00 40.0	2.00	5.00	10.0	20.0
Ethyl acetate	FB	Ave	47625 2089473	89468	223870	470467	950669	2.00 80.0	4.00	10.0	20.0	40.0
Propionitrile	FB	Ave	21242 1145388	49353	122765	261328	526981	10.0 400	20.0	50.0	100	200
Methacrylonitrile	FB	Ave	145312 7532540	290628	788067	1641348	3341130	10.0 400	20.0	50.0	100	200
Tert-amyl methyl ether	FB	Ave	78318 3877956	150133	415735	854671	1734384	1.00 40.0	2.00	5.00	10.0	20.0
n-Butanol	CBNZ d5	Ave	10602 308020	25773	48409	119284	219417	25.0 1000	50.0	125	250	500
Ethyl acrylate	FB	Ave	28393 1440845	55891	145720	320216	659966	1.00 40.0	2.00	5.00	10.0	20.0
Methyl methacrylate	FB	Ave	45248 2205049	85609	225648	478658	1004994	2.00 80.0	4.00	10.0	20.0	40.0
2-Nitropropane	FB	Ave	9889 528864	18677	49862	117183	231538	2.00 80.0	4.00	10.0	20.0	40.0
n-Butyl acetate	FB	Ave	33080 1650770	66109	172039	359433	759142	1.00 40.0	2.00	5.00	10.0	20.0
1-Chlorohexane	CBNZ d5	Ave	32857 1407305	63884	167738	328548	686784	1.00 40.0	2.00	5.00	10.0	20.0
Cyclohexanone	DCBd 4	Ave	4634 133062	11130	24942	50994	98594	10.0 400	20.0	50.0	100	200
Pentachloroethane	CBNZ d5	Lin1	19284 1115443	33531	108940	236808	500260	2.00 80.0	4.00	10.0	20.0	40.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269659

SDG No.:

Instrument ID: A3UX11 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 15:23 Calibration End Date: 03/08/2017 17:17 Calibration ID: 38706

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
1,2,3-Trimethylbenzene	DCBd 4	Ave	73212 3598453	149344	432162	834871	1700319	1.00 40.0	2.00	5.00	10.0	20.0
Benzyl chloride	DCBd 4	Lin1	5724 418512	13175	35611	85378	193060	1.00 40.0	2.00	5.00	10.0	20.0
1,3,5-Trichlorobenzene	DCBd 4	Ave	20283 889947	40385	112725	215272	434180	1.00 40.0	2.00	5.00	10.0	20.0
2-Methylnaphthalene	DCBd 4	Ave	44000 2210617	103066	253760	564787	1098672	2.00 80.0	4.00	10.0	20.0	40.0

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 11:17 Calibration End Date: 02/08/2017 13:20 Calibration ID: 38230

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD8260 240-265930/8	UXM0695.D
Level 2	STD8260 240-265930/9	UXM0696.D
Level 3	STD8260 240-265930/10	UXM0697.D
Level 4	ICIS 240-265930/11	UXM0698.D
Level 5	STD8260 240-265930/12	UXM0699.D
Level 6	STD8260 240-265930/13	UXM0700.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Dichlorodifluoromethane	0.1648 0.2371	0.1692	0.2445	0.2601	0.2654	Lin1	-0.052	0.2514			0.1000				0.9970		0.9900
Chloromethane	0.4176 0.3938	0.3642	0.3776	0.3900	0.4257	Ave		0.3948			0.1000	5.9		20.0			
Vinyl chloride	0.3830 0.3750	0.3080	0.3686	0.3646	0.4142	Ave		0.3689			0.1000	9.4		20.0			
Butadiene	0.3484 0.3252	0.2381	0.3291	0.3238	0.3641	Ave		0.3214				13.6		20.0			
Bromomethane	0.1794 0.1963	0.1680	0.1933	0.1981	0.2210	Ave		0.1927			0.0500	9.4		20.0			
Chloroethane	0.2453 0.2306	0.1810	0.2149	0.2223	0.2522	Ave		0.2244			0.0500	11.3		20.0			
Dichlorofluoromethane	0.5077 0.5236	0.4527	0.5011	0.5103	0.5663	Ave		0.5103				7.2		20.0			
Trichlorofluoromethane	0.2007 0.3322	0.2156	0.3366	0.3398	0.3782	Lin1	-0.094	0.3506			0.1000				0.9960		0.9900
Ethyl ether	0.2121 0.2339	0.2161	0.2095	0.2328	0.2556	Ave		0.2267				7.8		20.0			
Acrolein	0.0441 0.0375	0.0415	0.0358	0.0369	0.0416	Ave		0.0396				8.3		20.0			
1,1-Dichloroethene	0.2886 0.2619	0.2156	0.2493	0.2670	0.2859	Ave		0.2614			0.1000	10.3		20.0			
Acetone	+++++ 0.0698	0.0989	0.0759	0.0856	0.0890	Ave		0.0838			0.0100	13.6		20.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	0.1206 0.1526	0.1262	0.1451	0.1655	0.1714	Ave		0.1469			0.0500	14.0		20.0			
Iodomethane	0.4284 0.4153	0.3437	0.3824	0.4244	0.4536	Ave		0.4080				9.6		20.0			
Carbon disulfide	+++++ 0.9426	0.8293	0.8744	0.9656	1.0423	Ave		0.9308			0.1000	8.9		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 11:17 Calibration End Date: 02/08/2017 13:20 Calibration ID: 38230

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
3-Chloro-1-propene	0.2014 0.2040	0.1555	0.1808	0.2002	0.2159	Ave		0.1930				11.2		20.0			
Methyl acetate	0.1928 0.1423	0.1613	0.1385	0.1524	0.1649	Ave		0.1587			0.1000	12.4		20.0			
Methylene Chloride	+++++ 0.3066	0.9852	0.3287	0.3276	0.3246	Lin1	0.6613	0.2969			0.1000				0.9980		0.9900
2-Methyl-2-propanol	0.0194 0.0160	0.0174	0.0155	0.0179	0.0188	Ave		0.0175				8.8		20.0			
Acrylonitrile	0.0787 0.0773	0.0707	0.0707	0.0792	0.0881	Ave		0.0774				8.3		20.0			
trans-1,2-Dichloroethene	0.3908 0.3021	0.2608	0.2594	0.3017	0.3136	Ave		0.3047			0.1000	15.7		20.0			
Methyl tert-butyl ether	0.6950 0.7470	0.6660	0.6579	0.7653	0.8048	Ave		0.7227			0.1000	8.1		20.0			
Hexane	0.3470 0.2380	0.2502	0.2515	0.2654	0.2531	Ave		0.2675				14.9		20.0			
1,1-Dichloroethane	0.5289 0.5356	0.4351	0.4707	0.5253	0.5533	Ave		0.5082			0.2000	8.9		20.0			
Vinyl acetate	0.4775 0.4322	0.4393	0.4025	0.4356	0.4609	Ave		0.4413				5.8		20.0			
cis-1,2-Dichloroethene	0.3839 0.3315	0.2759	0.2961	0.3258	0.3367	Ave		0.3250			0.1000	11.4		20.0			
2,2-Dichloropropane	0.2956 0.3630	0.3145	0.3454	0.3747	0.3844	Ave		0.3463				10.1		20.0			
2-Butanone (MEK)	0.1259 0.0860	0.1104	0.0861	0.0928	0.0999	Ave		0.1002			0.0100	15.6		20.0			
Chlorobromomethane	0.1378 0.1414	0.1098	0.1231	0.1370	0.1441	Ave		0.1322				9.9		20.0			
Tetrahydrofuran	0.0884 0.0544	0.0672	0.0515	0.0554	0.0618	Lin1	0.0260	0.0562							0.9950		0.9900
Chloroform	0.4736 0.4816	0.4116	0.4242	0.4731	0.4849	Ave		0.4582			0.2000	6.9		20.0			
1,1,1-Trichloroethane	0.3228 0.3986	0.3088	0.3648	0.3873	0.4126	Ave		0.3658			0.1000	11.5		20.0			
Cyclohexane	0.3822 0.4251	0.3558	0.3911	0.4304	0.4532	Ave		0.4063			0.1000	8.9		20.0			
1,1-Dichloropropene	0.3968 0.3935	0.3258	0.3630	0.3843	0.4157	Ave		0.3799				8.3		20.0			
Carbon tetrachloride	0.2740 0.3322	0.2705	0.2967	0.3240	0.3502	Ave		0.3079			0.1000	10.6		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 11:17 Calibration End Date: 02/08/2017 13:20 Calibration ID: 38230

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Isobutyl alcohol	0.0068 0.0054	0.0053	0.0051	0.0060	0.0064	Ave		0.0058				11.4		20.0			
Benzene	1.1322 1.1868	0.9742	1.0448	1.1522	1.2464	Ave		1.1228			0.5000	8.8		20.0			
1,2-Dichloroethane	0.3413 0.3337	0.3076	0.2973	0.3297	0.3608	Ave		0.3284			0.1000	7.0		20.0			
n-Heptane	+++++ 0.1058	0.7533	0.1688	0.1330	0.1264	Lin1	0.6568	0.1009							0.9950		0.9900
Trichloroethene	0.3387 0.2898	0.2398	0.2535	0.2790	0.3046	Ave		0.2843			0.1500	12.5		20.0			
Methylcyclohexane	0.3152 0.3343	0.2967	0.3159	0.3386	0.3619	Ave		0.3271			0.1000	7.0		20.0			
1,2-Dichloropropane	0.2673 0.2805	0.2220	0.2480	0.2729	0.2960	Ave		0.2644			0.1000	9.9		20.0			
Dibromomethane	0.1495 0.1371	0.1148	0.1226	0.1335	0.1522	Ave		0.1350				10.9		20.0			
1,4-Dioxane	+++++ 0.0017	0.0015	0.0015	0.0018	0.0020	Ave		0.0017				11.7		20.0			
Dichlorobromomethane	0.3071 0.3373	0.2812	0.2963	0.3113	0.3539	Ave		0.3145			0.1500	8.5		20.0			
2-Chloroethyl vinyl ether	0.1020 0.1278	0.1027	0.1175	0.1262	0.1445	Ave		0.1201				13.6		20.0			
cis-1,3-Dichloropropene	0.4904 0.4546	0.3504	0.4007	0.4229	0.4801	Ave		0.4332			0.1500	12.2		20.0			
4-Methyl-2-pentanone (MIBK)	0.1791 0.1747	0.1777	0.1749	0.1879	0.2045	Ave		0.1831			0.0500	6.3		20.0			
Toluene	1.5807 1.6126	1.3100	1.5016	1.4843	1.6616	Ave		1.5251			0.4000	8.2		20.0			
trans-1,3-Dichloropropene	0.5455 0.4937	0.4272	0.4704	0.4666	0.5340	Ave		0.4896			0.1000	9.1		20.0			
Ethyl methacrylate	0.3523 0.3793	0.3777	0.4012	0.3922	0.4262	Ave		0.3881				6.4		20.0			
1,1,2-Trichloroethane	0.2419 0.2574	0.2368	0.2476	0.2361	0.2810	Ave		0.2501			0.1000	6.8		20.0			
Tetrachloroethene	0.2644 0.2657	0.2265	0.2433	0.2494	0.2762	Ave		0.2543			0.1500	7.1		20.0			
1,3-Dichloropropane	0.4258 0.4844	0.4640	0.4728	0.4626	0.5278	Ave		0.4729				7.0		20.0			
2-Hexanone	0.1922 0.1672	0.1848	0.1854	0.1888	0.2018	Ave		0.1867			0.0500	6.1		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 11:17 Calibration End Date: 02/08/2017 13:20 Calibration ID: 38230

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Chlorodibromomethane	0.2937 0.3013	0.2454	0.2787	0.2893	0.3224	Ave		0.2885				8.9		20.0			
Ethylene Dibromide	0.2513 0.2487	0.1951	0.2372	0.2443	0.2712	Ave		0.2413				10.5		20.0			
Chlorobenzene	1.1527 1.0056	0.8753	0.9036	0.9651	1.0385	Ave		0.9902			0.3000	10.1		20.0			
1,1,1,2-Tetrachloroethane	0.3207 0.3510	0.3023	0.3018	0.3369	0.3695	Ave		0.3304				8.2		20.0			
Ethylbenzene	0.5573 0.5456	0.4748	0.4781	0.5290	0.5713	Ave		0.5260				7.8		20.0			
m-Xylene & p-Xylene	0.7374 0.6843	0.5509	0.6226	0.6568	0.7048	Ave		0.6595				10.0		20.0			
o-Xylene	0.6736 0.6953	0.5721	0.6192	0.6710	0.7162	Ave		0.6579				8.1		20.0			
Styrene	1.0530 1.1585	0.9345	1.0311	1.1252	1.2061	Ave		1.0847			0.3000	9.1		20.0			
Bromoform	0.2210 0.1745	0.1790	0.1617	0.1757	0.1927	Ave		0.1841			0.1000	11.2		20.0			
Isopropylbenzene	1.7123 1.7084	1.3896	1.5478	1.6208	1.7853	Ave		1.6274			0.1000	8.8		20.0			
1,1,2,2-Tetrachloroethane	0.6184 0.5809	0.5680	0.5227	0.5931	0.6385	Ave		0.5869			0.3000	6.9		20.0			
Bromobenzene	0.8089 0.7120	0.6336	0.6141	0.6919	0.7270	Ave		0.6979				10.0		20.0			
1,2,3-Trichloropropane	0.1680 0.1709	0.1389	0.1627	0.1769	0.1874	Ave		0.1675				9.8		20.0			
trans-1,4-Dichloro-2-butene	+++++ 0.1516	0.1408	0.1331	0.1501	0.1823	Ave		0.1516				12.4		20.0			
N-Propylbenzene	0.8774 0.7796	0.6552	0.6660	0.7565	0.8149	Ave		0.7583				11.3		20.0			
2-Chlorotoluene	0.7018 0.6984	0.5874	0.5990	0.6711	0.7182	Ave		0.6627				8.5		20.0			
1,3,5-Trimethylbenzene	2.6463 2.4475	2.0808	2.1384	2.3631	2.5782	Ave		2.3757				9.7		20.0			
4-Chlorotoluene	0.7921 0.7218	0.6402	0.6361	0.6965	0.7518	Ave		0.7064				8.7		20.0			
tert-Butylbenzene	2.0182 2.0625	1.7307	1.7602	1.9578	2.1584	Ave		1.9480				8.7		20.0			
1,2,4-Trimethylbenzene	3.3200 2.6339	2.1678	2.2129	2.5085	2.7112	Ave		2.5924				16.2		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 11:17 Calibration End Date: 02/08/2017 13:20 Calibration ID: 38230

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
sec-Butylbenzene	2.8244 2.7342	2.5123	2.3498	2.6066	2.8808	Ave		2.6514				7.6		20.0			
1,3-Dichlorobenzene	1.7262 1.3784	1.1578	1.2106	1.3360	1.4255	Ave		1.3724			0.6000	14.6		20.0			
4-Isopropyltoluene	2.4349 2.3998	1.9344	2.0990	2.2773	2.5078	Ave		2.2755				9.7		20.0			
1,4-Dichlorobenzene	+++++ 1.4020	1.1493	1.2473	1.3224	1.4564	Ave		1.3155			0.5000	9.3		20.0			
n-Butylbenzene	2.2888 2.0327	1.6485	1.6774	1.8467	2.0741	Ave		1.9280				12.9		20.0			
1,2-Dichlorobenzene	1.4426 1.3362	1.0751	1.1427	1.2497	1.3690	Ave		1.2692			0.4000	11.1		20.0			
1,2-Dibromo-3-Chloropropane	+++++ 0.1123	0.0947	0.0943	0.1065	0.1225	Ave		0.1060			0.0500	11.3		20.0			
1,2,4-Trichlorobenzene	+++++ 0.7379	0.6682	0.6057	0.6763	0.7662	Ave		0.6909			0.2000	9.1		20.0			
Hexachlorobutadiene	+++++ 0.2614	0.2042	0.2086	0.2363	0.2531	Ave		0.2327				11.1		20.0			
Naphthalene	+++++ 1.7405	1.5096	1.4202	1.6262	1.8750	Ave		1.6343				11.1		20.0			
1,2,3-Trichlorobenzene	+++++ 0.5985	0.4882	0.4828	0.5650	0.6417	Ave		0.5553				12.5		20.0			
Dibromofluoromethane (Surr)	+++++ 0.2459	0.2091	0.2210	0.2407	0.2529	Ave		0.2339				7.8		20.0			
1,2-Dichloroethane-d4 (Surr)	+++++ 0.2708	0.2423	0.2463	0.2638	0.2859	Ave		0.2618				6.8		20.0			
Toluene-d8 (Surr)	+++++ 1.3757	1.1090	1.3199	1.2491	1.4370	Ave		1.2982				9.7		20.0			
4-Bromofluorobenzene (Surr)	+++++ 0.4778	0.4815	0.4812	0.4899	0.5226	Ave		0.4906				3.8		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 11:17 Calibration End Date: 02/08/2017 13:20 Calibration ID: 38230

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD8260 240-265930/8	UXM0695.D
Level 2	STD8260 240-265930/9	UXM0696.D
Level 3	STD8260 240-265930/10	UXM0697.D
Level 4	ICIS 240-265930/11	UXM0698.D
Level 5	STD8260 240-265930/12	UXM0699.D
Level 6	STD8260 240-265930/13	UXM0700.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Dichlorodifluoromethane	FB	Lin1	4204 687315	8156	118923	246914	488281	0.500 60.0	1.00	10.0	20.0	40.0
Chloromethane	FB	Ave	10655 1141308	17553	183648	370272	783057	0.500 60.0	1.00	10.0	20.0	40.0
Vinyl chloride	FB	Ave	9773 1086862	14847	179315	346122	762063	0.500 60.0	1.00	10.0	20.0	40.0
Butadiene	FB	Ave	8889 942390	11476	160096	307366	669736	0.500 60.0	1.00	10.0	20.0	40.0
Bromomethane	FB	Ave	4576 568905	8099	94049	188116	406488	0.500 60.0	1.00	10.0	20.0	40.0
Chloroethane	FB	Ave	6258 668405	8723	104538	211007	463971	0.500 60.0	1.00	10.0	20.0	40.0
Dichlorofluoromethane	FB	Ave	12953 1517482	21817	243740	484444	1041715	0.500 60.0	1.00	10.0	20.0	40.0
Trichlorofluoromethane	FB	Lin1	5121 962761	10393	163708	322566	695715	0.500 60.0	1.00	10.0	20.0	40.0
Ethyl ether	FB	Ave	5412 677982	10415	101899	221003	470198	0.500 60.0	1.00	10.0	20.0	40.0
Acrolein	FB	Ave	5627 542939	9999	87005	175358	382404	2.50 300	5.00	50.0	100	200
1,1-Dichloroethene	FB	Ave	7363 759112	10391	121286	253455	525922	0.500 60.0	1.00	10.0	20.0	40.0
Acetone	FB	Ave	+++++ 404391	9533	73882	162494	327621	+++++ 120	2.00	20.0	40.0	80.0
1,1,2-Trichloro-1,2,2-trifluoroethane	FB	Ave	3077 442374	6084	70592	157144	315362	0.500 60.0	1.00	10.0	20.0	40.0
Iodomethane	FB	Ave	10931 1203573	16564	186029	402955	834498	0.500 60.0	1.00	10.0	20.0	40.0
Carbon disulfide	FB	Ave	+++++ 2731803	39971	425317	916730	1917497	+++++ 60.0	1.00	10.0	20.0	40.0
3-Chloro-1-propene	FB	Ave	5139 591331	7494	87936	190019	397229	0.500 60.0	1.00	10.0	20.0	40.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 11:17 Calibration End Date: 02/08/2017 13:20 Calibration ID: 38230

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Methyl acetate	FB	Ave	24597 2061489	38870	336748	723628	1516996	2.50 300	5.00	50.0	100	200
Methylene Chloride	FB	Lin1	+++++ 888743	47486	159902	310981	597131	+++++ 60.0	1.00	10.0	20.0	40.0
2-Methyl-2-propanol	FB	Ave	4957 464149	8388	75351	169486	346242	5.00 600	10.0	100	200	400
Acrylonitrile	FB	Ave	20079 2239555	34059	344088	751761	1620485	5.00 600	10.0	100	200	400
trans-1,2-Dichloroethene	FB	Ave	9971 875545	12569	126157	286463	576830	0.500 60.0	1.00	10.0	20.0	40.0
Methyl tert-butyl ether	FB	Ave	17733 2164886	32098	320016	726518	1480605	0.500 60.0	1.00	10.0	20.0	40.0
Hexane	FB	Ave	8854 689924	12057	122355	251970	465568	0.500 60.0	1.00	10.0	20.0	40.0
1,1-Dichloroethane	FB	Ave	13495 1552450	20970	228943	498734	1017797	0.500 60.0	1.00	10.0	20.0	40.0
Vinyl acetate	FB	Ave	12183 1252663	21172	195791	413522	847912	0.500 60.0	1.00	10.0	20.0	40.0
cis-1,2-Dichloroethene	FB	Ave	9795 960763	13300	144037	309311	619341	0.500 60.0	1.00	10.0	20.0	40.0
2,2-Dichloropropane	FB	Ave	7542 1052041	15159	168003	355749	707208	0.500 60.0	1.00	10.0	20.0	40.0
2-Butanone (MEK)	FB	Ave	6423 498395	10639	83804	176209	367676	1.00 120	2.00	20.0	40.0	80.0
Chlorobromomethane	FB	Ave	3517 409769	5293	59896	130073	265071	0.500 60.0	1.00	10.0	20.0	40.0
Tetrahydrofuran	FB	Lin1	4511 315194	6473	50130	105191	227296	1.00 120	2.00	20.0	40.0	80.0
Chloroform	FB	Ave	12083 1395801	19840	206338	449185	892115	0.500 60.0	1.00	10.0	20.0	40.0
1,1,1-Trichloroethane	FB	Ave	8235 1155238	14884	177442	367680	759125	0.500 60.0	1.00	10.0	20.0	40.0
Cyclohexane	FB	Ave	9751 1231992	17150	190262	408616	833709	0.500 60.0	1.00	10.0	20.0	40.0
1,1-Dichloropropene	FB	Ave	10125 1140599	15704	176562	364875	764820	0.500 60.0	1.00	10.0	20.0	40.0
Carbon tetrachloride	FB	Ave	6990 962886	13038	144306	307573	644195	0.500 60.0	1.00	10.0	20.0	40.0
Isobutyl alcohol	FB	Ave	4307 388001	6398	62175	143248	292821	12.5 1500	25.0	250	500	1000
Benzene	FB	Ave	28888 3439605	46956	508201	1093860	2292910	0.500 60.0	1.00	10.0	20.0	40.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 11:17 Calibration End Date: 02/08/2017 13:20 Calibration ID: 38230

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
1,2-Dichloroethane	FB	Ave	8709 967083	14826	144618	312981	663679	0.500 60.0	1.00	10.0	20.0	40.0
n-Heptane	FB	Lin1	+++++ 306620	36308	82093	126219	232604	+++++ 60.0	1.00	10.0	20.0	40.0
Trichloroethene	FB	Ave	8642 840016	11557	123312	264913	560388	0.500 60.0	1.00	10.0	20.0	40.0
Methylcyclohexane	FB	Ave	8041 968963	14302	153649	321470	665835	0.500 60.0	1.00	10.0	20.0	40.0
1,2-Dichloropropane	FB	Ave	6819 812861	10700	120644	259090	544464	0.500 60.0	1.00	10.0	20.0	40.0
Dibromomethane	FB	Ave	3815 397392	5533	59651	126781	280060	0.500 60.0	1.00	10.0	20.0	40.0
1,4-Dioxane	FB	Ave	+++++ 98191	1435	14905	34027	72789	+++++ 1200	20.0	200	400	800
Dichlorobromomethane	FB	Ave	7835 977670	13551	144123	295566	651051	0.500 60.0	1.00	10.0	20.0	40.0
2-Chloroethyl vinyl ether	FB	Ave	5205 740890	9895	114292	239695	531791	1.00 120	2.00	20.0	40.0	80.0
cis-1,3-Dichloropropene	FB	Ave	12512 1317443	16887	194915	401464	883203	0.500 60.0	1.00	10.0	20.0	40.0
4-Methyl-2-pentanone (MIBK)	FB	Ave	9140 1012459	17129	170159	356824	752556	1.00 120	2.00	20.0	40.0	80.0
Toluene	CBNZ d5	Ave	30234 3485260	47354	512502	1066239	2310110	0.500 60.0	1.00	10.0	20.0	40.0
trans-1,3-Dichloropropene	CBNZ d5	Ave	10435 1067066	15442	160532	335183	742383	0.500 60.0	1.00	10.0	20.0	40.0
Ethyl methacrylate	CBNZ d5	Ave	6738 819681	13652	136920	281751	592501	0.500 60.0	1.00	10.0	20.0	40.0
1,1,2-Trichloroethane	CBNZ d5	Ave	4626 556223	8561	84512	169574	390719	0.500 60.0	1.00	10.0	20.0	40.0
Tetrachloroethene	CBNZ d5	Ave	5057 574157	8189	83044	179155	384015	0.500 60.0	1.00	10.0	20.0	40.0
1,3-Dichloropropane	CBNZ d5	Ave	8144 1046843	16771	161369	332283	733813	0.500 60.0	1.00	10.0	20.0	40.0
2-Hexanone	CBNZ d5	Ave	7353 722564	13359	126544	271287	561183	1.00 120	2.00	20.0	40.0	80.0
Chlorodibromomethane	CBNZ d5	Ave	5618 651305	8872	95120	207834	448227	0.500 60.0	1.00	10.0	20.0	40.0
Ethylene Dibromide	CBNZ d5	Ave	4806 537424	7052	80945	175522	376992	0.500 60.0	1.00	10.0	20.0	40.0
Chlorobenzene	CBNZ d5	Ave	22049 2173407	31640	308409	693317	1443779	0.500 60.0	1.00	10.0	20.0	40.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 11:17 Calibration End Date: 02/08/2017 13:20 Calibration ID: 38230

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
1,1,1,2-Tetrachloroethane	CBNZ d5	Ave	6135 758696	10928	102988	242043	513702	0.500 60.0	1.00	10.0	20.0	40.0
Ethylbenzene	CBNZ d5	Ave	10660 1179270	17161	163186	380018	794283	0.500 60.0	1.00	10.0	20.0	40.0
m-Xylene & p-Xylene	CBNZ d5	Ave	14105 1478968	19912	212474	471798	979861	0.500 60.0	1.00	10.0	20.0	40.0
o-Xylene	CBNZ d5	Ave	12885 1502819	20681	211338	482027	995741	0.500 60.0	1.00	10.0	20.0	40.0
Styrene	CBNZ d5	Ave	20142 2503968	33780	351900	808289	1676813	0.500 60.0	1.00	10.0	20.0	40.0
Bromoform	CBNZ d5	Ave	4228 377209	6471	55195	126246	267859	0.500 60.0	1.00	10.0	20.0	40.0
Isopropylbenzene	CBNZ d5	Ave	32752 3692438	50228	528253	1164301	2481988	0.500 60.0	1.00	10.0	20.0	40.0
1,1,2,2-Tetrachloroethane	DCBd 4	Ave	6490 673044	11155	103713	238667	503701	0.500 60.0	1.00	10.0	20.0	40.0
Bromobenzene	DCBd 4	Ave	8490 824959	12443	121849	278414	573587	0.500 60.0	1.00	10.0	20.0	40.0
1,2,3-Trichloropropane	DCBd 4	Ave	1763 198043	2727	32292	71187	147822	0.500 60.0	1.00	10.0	20.0	40.0
trans-1,4-Dichloro-2-butene	DCBd 4	Ave	+++++ 175640	2765	26411	60379	143806	+++++ 60.0	1.00	10.0	20.0	40.0
N-Propylbenzene	DCBd 4	Ave	9209 903273	12867	132164	304408	642926	0.500 60.0	1.00	10.0	20.0	40.0
2-Chlorotoluene	DCBd 4	Ave	7366 809276	11535	118870	270017	566581	0.500 60.0	1.00	10.0	20.0	40.0
1,3,5-Trimethylbenzene	DCBd 4	Ave	27774 2835836	40863	424324	950870	2034074	0.500 60.0	1.00	10.0	20.0	40.0
4-Chlorotoluene	DCBd 4	Ave	8313 836311	12573	126219	280269	593154	0.500 60.0	1.00	10.0	20.0	40.0
tert-Butylbenzene	DCBd 4	Ave	21182 2389750	33988	349287	787786	1702872	0.500 60.0	1.00	10.0	20.0	40.0
1,2,4-Trimethylbenzene	DCBd 4	Ave	34844 3051781	42571	439107	1009369	2138943	0.500 60.0	1.00	10.0	20.0	40.0
sec-Butylbenzene	DCBd 4	Ave	29643 3168001	49337	466281	1048831	2272821	0.500 60.0	1.00	10.0	20.0	40.0
1,3-Dichlorobenzene	DCBd 4	Ave	18117 1597067	22737	240229	537584	1124662	0.500 60.0	1.00	10.0	20.0	40.0
4-Isopropyltoluene	DCBd 4	Ave	25555 2780624	37987	416519	916327	1978523	0.500 60.0	1.00	10.0	20.0	40.0
1,4-Dichlorobenzene	DCBd 4	Ave	+++++ 1624480	22570	247508	532094	1149007	+++++ 60.0	1.00	10.0	20.0	40.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 11:17 Calibration End Date: 02/08/2017 13:20 Calibration ID: 38230

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
n-Butylbenzene	DCBd 4	Ave	24022 2355198	32373	332845	743073	1636363	0.500 60.0	1.00	10.0	20.0	40.0
1,2-Dichlorobenzene	DCBd 4	Ave	15141 1548170	21113	226747	502863	1080081	0.500 60.0	1.00	10.0	20.0	40.0
1,2-Dibromo-3-Chloropropane	DCBd 4	Ave	+++++ 130083	1860	18704	42847	96644	+++++ 60.0	1.00	10.0	20.0	40.0
1,2,4-Trichlorobenzene	DCBd 4	Ave	+++++ 855020	13122	120189	272137	604510	+++++ 60.0	1.00	10.0	20.0	40.0
Hexachlorobutadiene	DCBd 4	Ave	+++++ 302886	4010	41388	95079	199707	+++++ 60.0	1.00	10.0	20.0	40.0
Naphthalene	DCBd 4	Ave	+++++ 2016647	29646	281807	654344	1479232	+++++ 60.0	1.00	10.0	20.0	40.0
1,2,3-Trichlorobenzene	DCBd 4	Ave	+++++ 693497	9588	95806	227363	506268	+++++ 60.0	1.00	10.0	20.0	40.0
Dibromofluoromethane (Surr)	FB	Ave	+++++ 712768	10078	107520	228510	465153	+++++ 60.0	1.00	10.0	20.0	40.0
1,2-Dichloroethane-d4 (Surr)	FB	Ave	+++++ 784715	11678	119821	250450	525907	+++++ 60.0	1.00	10.0	20.0	40.0
Toluene-d8 (Surr)	CBNZ d5	Ave	+++++ 2973365	40088	450490	897310	1997819	+++++ 60.0	1.00	10.0	20.0	40.0
4-Bromofluorobenzene (Surr)	CBNZ d5	Ave	+++++ 1032676	17406	164241	351921	726530	+++++ 60.0	1.00	10.0	20.0	40.0

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 14:06 Calibration End Date: 02/08/2017 16:03 Calibration ID: 38236

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STDA9 240-265930/15	UXM0702.D
Level 2	STDA9 240-265930/16	UXM0703.D
Level 3	STDA9 240-265930/17	UXM0704.D
Level 4	STDA9 240-265930/18	UXM0705.D
Level 5	STDA9 240-265930/19	UXM0706.D
Level 6	STDA9 240-265930/20	UXM0707.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Acetonitrile	0.0559 0.0271	0.0411	0.0268	0.0274	0.0278	Lin1	0.1397	0.0269							1.0000		0.9900
Isopropyl ether	0.2137 0.2744	0.2399	0.2707	0.2661	0.2759	Ave		0.2568				9.7		20.0			
2-Chloro-1,3-butadiene	0.4261 0.4837	0.4263	0.4764	0.4809	0.4864	Ave		0.4633				6.2		20.0			
Tert-butyl ethyl ether	0.8646 0.9359	0.8131	0.9111	0.9128	0.9378	Ave		0.8959				5.4		20.0			
Propionitrile	0.0274 0.0284	0.0266	0.0279	0.0283	0.0293	Ave		0.0280				3.3		20.0			
Ethyl acetate	0.1834 0.1694	0.1779	0.1772	0.1728	0.1774	Ave		0.1764				2.7		20.0			
Methacrylonitrile	0.1308 0.1317	0.1200	0.1324	0.1313	0.1355	Ave		0.1303				4.1		20.0			
Tert-amyl methyl ether	0.7342 0.8406	0.7331	0.8145	0.8259	0.8544	Ave		0.8004				6.7		20.0			
n-Butanol	0.0045 0.0052	0.0042	0.0049	0.0051	0.0054	Ave		0.0049				9.6		20.0			
Ethyl acrylate	0.2350 0.2376	0.2484	0.2502	0.2550	0.2571	Ave		0.2472				3.7		20.0			
Methyl methacrylate	0.1843 0.1801	0.1758	0.1906	0.1867	0.1883	Ave		0.1843				3.0		20.0			
2-Nitropropane	0.0615 0.0497	0.0462	0.0506	0.0500	0.0519	Ave		0.0517				10.1		20.0			
n-Butyl acetate	0.4234 0.3298	0.3605	0.3313	0.3402	0.3513	Ave		0.3561				9.8		20.0			
1-Chlorohexane	0.4213 0.4308	0.4250	0.4440	0.4316	0.4363	Ave		0.4315				1.9		20.0			
Cyclohexanone	+++++ 0.0137	0.0116	0.0140	0.0136	0.0142	Ave		0.0134				7.8		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 14:06 Calibration End Date: 02/08/2017 16:03 Calibration ID: 38236

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Pentachloroethane	0.1928 0.2468	0.2005	0.2308	0.2258	0.2417	Lin1	-0.071	0.2419							0.9990		0.9900
1,2,3-Trimethylbenzene	2.4824 2.8101	2.4241	2.7316	2.6539	2.7707	Ave		2.6454				6.0		20.0			
Benzyl chloride	0.2263 0.2892	0.2357	0.2696	0.2602	0.2827	Lin1	-0.041	0.2826							0.9990		0.9900
1,3,5-Trichlorobenzene	0.7795 0.7930	0.7136	0.7651	0.7562	0.7600	Ave		0.7612				3.5		20.0			
2-Methylnaphthalene	0.4998 0.7711	0.5384	0.6698	0.6920	0.7439	Ave		0.6525				16.9		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 14:06 Calibration End Date: 02/08/2017 16:03 Calibration ID: 38236

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STDA9 240-265930/15	UXM0702.D
Level 2	STDA9 240-265930/16	UXM0703.D
Level 3	STDA9 240-265930/17	UXM0704.D
Level 4	STDA9 240-265930/18	UXM0705.D
Level 5	STDA9 240-265930/19	UXM0706.D
Level 6	STDA9 240-265930/20	UXM0707.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Acetonitrile	FB	Lin1	12543 752712	18945	125186	255817	515099	5.00 600	10.0	100	200	400
Isopropyl ether	FB	Ave	4792 761632	11061	126464	248104	510534	0.500 60.0	1.00	10.0	20.0	40.0
2-Chloro-1,3-butadiene	FB	Ave	9553 1342339	19659	222535	448355	900058	0.500 60.0	1.00	10.0	20.0	40.0
Tert-butyl ethyl ether	FB	Ave	19385 2597269	37497	425619	850906	1735339	0.500 60.0	1.00	10.0	20.0	40.0
Propionitrile	FB	Ave	6135 787334	12258	130115	263814	542455	5.00 600	10.0	100	200	400
Ethyl acetate	FB	Ave	8222 940224	16412	165563	322190	656741	1.00 120	2.00	20.0	40.0	80.0
Methacrylonitrile	FB	Ave	29320 3654332	55320	618508	1224308	2506552	5.00 600	10.0	100	200	400
Tert-amyl methyl ether	FB	Ave	16462 2332774	33804	380485	769963	1581073	0.500 60.0	1.00	10.0	20.0	40.0
n-Butanol	FB	Ave	2503 360193	4815	57711	117750	251196	12.5 1500	25.0	250	500	1000
Ethyl acrylate	FB	Ave	5269 659263	11457	116863	237718	475689	0.500 60.0	1.00	10.0	20.0	40.0
Methyl methacrylate	FB	Ave	8265 999820	16217	178096	348063	696916	1.00 120	2.00	20.0	40.0	80.0
2-Nitropropane	FB	Ave	2760 275836	4258	47318	93255	192139	1.00 120	2.00	20.0	40.0	80.0
n-Butyl acetate	FB	Ave	9494 915151	16624	154738	317181	650026	0.500 60.0	1.00	10.0	20.0	40.0
1-Chlorohexane	CBNZ d5	Ave	6972 873799	14572	154264	304148	597957	0.500 60.0	1.00	10.0	20.0	40.0
Cyclohexanone	DCBd 4	Ave	+++++ 160135	2179	26555	53816	111010	+++++ 600	10.0	100	200	400
Pentachloroethane	CBNZ d5	Lin1	6381 1001058	13751	160392	318165	662596	1.00 120	2.00	20.0	40.0	80.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 265930

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2017 14:06 Calibration End Date: 02/08/2017 16:03 Calibration ID: 38236

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
1,2,3-Trimethylbenzene	DCBd 4	Ave	22484 3272980	45535	516762	1050035	2167165	0.500 60.0	1.00	10.0	20.0	40.0
Benzyl chloride	DCBd 4	Lin1	2050 336865	4427	51001	102955	221137	0.500 60.0	1.00	10.0	20.0	40.0
1,3,5-Trichlorobenzene	DCBd 4	Ave	7060 923604	13405	144733	299213	594474	0.500 60.0	1.00	10.0	20.0	40.0
2-Methylnaphthalene	DCBd 4	Ave	9053 1796135	20228	253436	547572	1163700	1.00 120	2.00	20.0	40.0	80.0

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269649

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 10:00 Calibration End Date: 03/08/2017 11:56 Calibration ID: 38701

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD8260 240-269649/8	UXM1069.D
Level 2	STD8260 240-269649/9	UXM1070.D
Level 3	STD8260 240-269649/10	UXM1071.D
Level 4	ICIS 240-269649/11	UXM1072.D
Level 5	STD8260 240-269649/12	UXM1073.D
Level 6	STD8260 240-269649/13	UXM1074.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Dichlorodifluoromethane	+++++ 0.2706	0.1484	0.2845	0.2994	0.2676	Lin1	-0.100	0.2780			0.1000				0.9970		0.9900
Chloromethane	0.4639 0.4076	0.3348	0.3784	0.3726	0.4101	Ave		0.3946			0.1000	11.1		20.0			
Vinyl chloride	0.4467 0.3847	0.3116	0.3639	0.3718	0.3874	Ave		0.3777			0.1000	11.5		20.0			
Butadiene	0.3907 0.3377	0.3033	0.3341	0.3294	0.3412	Ave		0.3394				8.4		20.0			
Bromomethane	0.1978 0.1965	0.1948	0.1890	0.1848	0.2057	Ave		0.1948			0.0500	3.7		20.0			
Chloroethane	0.2214 0.2294	0.1914	0.2118	0.2132	0.2373	Ave		0.2174			0.0500	7.4		20.0			
Dichlorofluoromethane	0.5301 0.5306	0.4525	0.4869	0.4883	0.5391	Ave		0.5046				6.8		20.0			
Trichlorofluoromethane	0.2359 0.3519	0.2405	0.3440	0.3510	0.3474	Ave		0.3118			0.1000	18.3		20.0			
Ethyl ether	0.2218 0.2301	0.2177	0.2158	0.2119	0.2374	Ave		0.2225				4.3		20.0			
Acrolein	0.0332 0.0274	0.0249	0.0243	0.0268	0.0287	Ave		0.0275				11.6		20.0			
1,1-Dichloroethene	0.3220 0.2778	0.2330	0.2656	0.2566	0.2759	Ave		0.2718			0.1000	10.9		20.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	0.1588 0.1704	0.1426	0.1744	0.1781	0.1704	Ave		0.1658			0.0500	7.9		20.0			
Acetone	+++++ 0.0767	0.1535	0.0942	0.0922	0.0756	Lin1	0.1776	0.0773			0.0100				0.9940		0.9900
Iodomethane	0.4565 0.4372	0.3805	0.4045	0.3976	0.4375	Ave		0.4190				6.9		20.0			
Carbon disulfide	+++++ 0.9775	0.8688	0.9228	0.8849	0.9758	Ave		0.9260			0.1000	5.4		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269649

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 10:00 Calibration End Date: 03/08/2017 11:56 Calibration ID: 38701

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
3-Chloro-1-propene	+++++ 0.2094	0.1742	0.1937	0.1886	0.2094	Ave		0.1951				7.7		20.0			
Methyl acetate	0.1613 0.1385	0.1513	0.1392	0.1379	0.1434	Ave		0.1453			0.1000	6.4		20.0			
Methylene Chloride	+++++ 0.3164	0.4027	0.3016	0.2845	0.3166	Ave		0.3244			0.1000	14.1		20.0			
2-Methyl-2-propanol	+++++ 0.0159	0.0187	0.0160	0.0168	0.0171	Ave		0.0169				6.6		20.0			
Acrylonitrile	0.0932 0.0757	0.0779	0.0738	0.0738	0.0786	Ave		0.0788				9.3		20.0			
trans-1,2-Dichloroethene	0.4270 0.3128	0.2972	0.2920	0.2809	0.3144	Ave		0.3207			0.1000	16.7		20.0			
Methyl tert-butyl ether	0.7696 0.7305	0.6698	0.7022	0.6837	0.7494	Ave		0.7175			0.1000	5.4		20.0			
Hexane	+++++ 0.2745	0.2477	0.3036	0.3266	0.2788	Ave		0.2862				10.5		20.0			
1,1-Dichloroethane	0.5266 0.5523	0.4600	0.5130	0.4897	0.5514	Ave		0.5155			0.2000	7.0		20.0			
Vinyl acetate	0.4562 0.4041	0.3949	0.3874	0.3810	0.4244	Ave		0.4080				6.9		20.0			
cis-1,2-Dichloroethene	0.3747 0.3460	0.2984	0.3201	0.3063	0.3457	Ave		0.3319			0.1000	8.7		20.0			
2,2-Dichloropropane	0.3194 0.3672	0.3389	0.3674	0.3461	0.3749	Ave		0.3523				6.0		20.0			
2-Butanone (MEK)	0.1250 0.0852	0.0999	0.0942	0.0941	0.0865	Ave		0.0975			0.0100	14.9		20.0			
Chlorobromomethane	0.1404 0.1424	0.1273	0.1333	0.1269	0.1419	Ave		0.1354				5.3		20.0			
Tetrahydrofuran	+++++ 0.0513	0.0486	0.0510	0.0508	0.0528	Ave		0.0509				3.0		20.0			
Chloroform	0.4631 0.4927	0.4431	0.4637	0.4381	0.4912	Ave		0.4653			0.2000	5.0		20.0			
1,1,1-Trichloroethane	0.3833 0.4104	0.3571	0.3818	0.3734	0.4060	Ave		0.3853			0.1000	5.2		20.0			
Cyclohexane	0.4458 0.4611	0.3890	0.4616	0.4808	0.4587	Ave		0.4495			0.1000	7.0		20.0			
1,1-Dichloropropene	0.4761 0.4069	0.3535	0.3871	0.3796	0.4036	Ave		0.4011				10.3		20.0			
Carbon tetrachloride	0.2795 0.3356	0.2843	0.3187	0.3137	0.3364	Ave		0.3114			0.1000	7.9		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269649

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 10:00 Calibration End Date: 03/08/2017 11:56 Calibration ID: 38701

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Isobutyl alcohol	0.0050 0.0052	0.0058	0.0051	0.0056	0.0055	Ave		0.0054				6.0		20.0			
Benzene	1.2096 1.2191	1.0404	1.1260	1.0851	1.2152	Ave		1.1492			0.5000	6.7		20.0			
1,2-Dichloroethane	0.3307 0.3277	0.3036	0.3133	0.3000	0.3330	Ave		0.3181			0.1000	4.5		20.0			
n-Heptane	+++++ 0.1201	0.7372	0.1861	0.1683	0.1255	Lin1	0.6424	0.1144							0.9910		0.9900
Trichloroethene	0.3361 0.2948	0.2679	0.2804	0.2686	0.2947	Ave		0.2904			0.1500	8.7		20.0			
Methylcyclohexane	0.3399 0.3765	0.3044	0.3820	0.4079	0.3769	Ave		0.3646			0.1000	10.0		20.0			
1,2-Dichloropropane	0.2239 0.2830	0.2410	0.2632	0.2526	0.2879	Ave		0.2586			0.1000	9.5		20.0			
Dibromomethane	0.1592 0.1371	0.1302	0.1268	0.1269	0.1394	Ave		0.1366				9.0		20.0			
1,4-Dioxane	+++++ 0.0019	0.0019	0.0019	0.0019	0.0020	Ave		0.0019				2.0		20.0			
Dichlorobromomethane	0.2862 0.3335	0.2917	0.3040	0.2990	0.3355	Ave		0.3083			0.1500	6.9		20.0			
2-Chloroethyl vinyl ether	0.1188 0.1274	0.1132	0.1187	0.1215	0.1305	Ave		0.1217				5.2		20.0			
cis-1,3-Dichloropropene	0.4494 0.4514	0.3628	0.4071	0.3880	0.4449	Ave		0.4173			0.1500	8.9		20.0			
4-Methyl-2-pentanone (MIBK)	0.2019 0.1615	0.1745	0.1749	0.1787	0.1735	Ave		0.1775			0.0500	7.5		20.0			
Toluene	1.5232 1.6752	1.4708	1.5684	1.4985	1.6799	Ave		1.5693			0.4000	5.7		20.0			
trans-1,3-Dichloropropene	0.5258 0.4877	0.4206	0.4624	0.4460	0.4985	Ave		0.4735			0.1000	8.0		20.0			
Ethyl methacrylate	0.3515 0.3673	0.3697	0.3837	0.3778	0.3934	Ave		0.3739				3.9		20.0			
1,1,2-Trichloroethane	0.2584 0.2579	0.2296	0.2463	0.2455	0.2705	Ave		0.2514			0.1000	5.6		20.0			
Tetrachloroethene	0.3025 0.2781	0.2448	0.2677	0.2551	0.2809	Ave		0.2715			0.1500	7.5		20.0			
1,3-Dichloropropane	0.4828 0.4949	0.4654	0.4779	0.4710	0.5075	Ave		0.4833				3.2		20.0			
2-Hexanone	0.1949 0.1656	0.1858	0.1979	0.2053	0.1732	Ave		0.1871			0.0500	8.2		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269649

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 10:00 Calibration End Date: 03/08/2017 11:56 Calibration ID: 38701

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Chlorodibromomethane	0.2613 0.3051	0.2571	0.2781	0.2748	0.3059	Ave		0.2804				7.5		20.0			
Ethylene Dibromide	0.2892 0.2509	0.2437	0.2442	0.2393	0.2581	Ave		0.2542				7.2		20.0			
Chlorobenzene	1.1521 1.0580	0.9115	0.9807	0.9446	1.0658	Ave		1.0188			0.3000	8.8		20.0			
1,1,1,2-Tetrachloroethane	0.3345 0.3660	0.2816	0.3405	0.3270	0.3694	Ave		0.3365				9.5		20.0			
Ethylbenzene	0.5366 0.5715	0.5048	0.5401	0.5132	0.5675	Ave		0.5389				5.1		20.0			
m-Xylene & p-Xylene	0.7466 0.7181	0.6034	0.6610	0.6457	0.7141	Ave		0.6815				7.9		20.0			
o-Xylene	0.7239 0.7248	0.6088	0.6691	0.6523	0.7431	Ave		0.6870				7.6		20.0			
Styrene	1.1950 1.2246	0.9959	1.1484	1.1008	1.2410	Ave		1.1510			0.3000	8.0		20.0			
Bromoform	0.1330 0.1704	0.1561	0.1604	0.1591	0.1722	Ave		0.1585			0.1000	8.9		20.0			
Isopropylbenzene	1.6496 1.8092	1.3914	1.6602	1.5709	1.7250	Ave		1.6344			0.1000	8.8		20.0			
1,1,2,2-Tetrachloroethane	0.6144 0.5807	0.5229	0.5923	0.5580	0.5895	Ave		0.5763			0.3000	5.5		20.0			
Bromobenzene	0.9353 0.7446	0.6498	0.7260	0.6535	0.7444	Ave		0.7422				14.0		20.0			
1,2,3-Trichloropropane	0.1466 0.1695	0.1557	0.1765	0.1642	0.1753	Ave		0.1646				7.1		20.0			
trans-1,4-Dichloro-2-butene	+++++ 0.1457	0.0887	0.1460	0.1342	0.1482	Ave		0.1326				18.9		20.0			
N-Propylbenzene	0.7567 0.8326	0.6589	0.8013	0.7341	0.8280	Ave		0.7686				8.6		20.0			
2-Chlorotoluene	0.6478 0.7349	0.6397	0.6999	0.6511	0.7494	Ave		0.6871				7.0		20.0			
1,3,5-Trimethylbenzene	2.3887 2.6566	2.0612	2.4367	2.2384	2.6709	Ave		2.4087				9.8		20.0			
4-Chlorotoluene	0.8114 0.7722	0.6668	0.7350	0.6657	0.7828	Ave		0.7390				8.3		20.0			
tert-Butylbenzene	2.3441 2.2534	1.8461	2.0946	1.9100	2.2704	Ave		2.1198				9.7		20.0			
1,2,4-Trimethylbenzene	2.6904 2.7823	2.2464	2.5455	2.3513	2.7224	Ave		2.5564				8.5		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269649

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 10:00 Calibration End Date: 03/08/2017 11:56 Calibration ID: 38701

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
sec-Butylbenzene	2.7269 2.9607	2.3671	2.7307	2.5478	2.8655	Ave		2.6998				8.0		20.0			
1,3-Dichlorobenzene	1.6310 1.4559	1.1654	1.3556	1.3009	1.4230	Ave		1.3886			0.6000	11.3		20.0			
4-Isopropyltoluene	2.4521 2.5600	2.0718	2.3444	2.2751	2.4743	Ave		2.3630				7.4		20.0			
1,4-Dichlorobenzene	1.8122 1.4702	1.2671	1.4024	1.3371	1.4583	Ave		1.4579			0.5000	13.0		20.0			
n-Butylbenzene	2.0888 2.1352	1.6578	1.9397	1.8723	2.0358	Ave		1.9549				8.9		20.0			
1,2-Dichlorobenzene	1.4618 1.3619	1.1803	1.2901	1.2593	1.3490	Ave		1.3171			0.4000	7.3		20.0			
1,2-Dibromo-3-Chloropropane	+++++ 0.0965	0.0592	0.0928	0.0941	0.0988	Ave		0.0883			0.0500	18.6		20.0			
1,2,4-Trichlorobenzene	+++++ 0.6942	0.6194	0.6340	0.6280	0.7536	Ave		0.6658			0.2000	8.6		20.0			
Hexachlorobutadiene	0.3954 0.2792	0.2892	0.2493	0.2490	0.2917	Ave		0.2923				18.4		20.0			
Naphthalene	+++++ 1.4698	1.3198	1.3144	1.4025	1.5801	Ave		1.4173				7.9		20.0			
1,2,3-Trichlorobenzene	+++++ 0.5165	0.4609	0.4720	0.4832	0.5546	Ave		0.4974				7.7		20.0			
Dibromofluoromethane (Surr)	+++++ 0.2463	0.2173	0.2240	0.2227	0.2492	Ave		0.2319				6.4		20.0			
1,2-Dichloroethane-d4 (Surr)	+++++ 0.2593	0.2248	0.2494	0.2416	0.2693	Ave		0.2489				6.8		20.0			
Toluene-d8 (Surr)	+++++ 1.4136	1.2176	1.3217	1.2733	1.4376	Ave		1.3327				7.0		20.0			
4-Bromofluorobenzene (Surr)	+++++ 0.5118	0.4676	0.4760	0.4610	0.5059	Ave		0.4845				4.7		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269649

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 10:00 Calibration End Date: 03/08/2017 11:56 Calibration ID: 38701

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD8260 240-269649/8	UXM1069.D
Level 2	STD8260 240-269649/9	UXM1070.D
Level 3	STD8260 240-269649/10	UXM1071.D
Level 4	ICIS 240-269649/11	UXM1072.D
Level 5	STD8260 240-269649/12	UXM1073.D
Level 6	STD8260 240-269649/13	UXM1074.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Dichlorodifluoromethane	FB	Lin1	+++++ 781570	7363	144339	295422	518895	+++++ 60.0	1.00	10.0	20.0	40.0
Chloromethane	FB	Ave	11433 1177280	16616	191963	367648	795169	0.500 60.0	1.00	10.0	20.0	40.0
Vinyl chloride	FB	Ave	11008 1111222	15466	184616	366850	751062	0.500 60.0	1.00	10.0	20.0	40.0
Butadiene	FB	Ave	9627 975600	15052	169511	325041	661484	0.500 60.0	1.00	10.0	20.0	40.0
Bromomethane	FB	Ave	4874 567516	9668	95908	182373	398917	0.500 60.0	1.00	10.0	20.0	40.0
Chloroethane	FB	Ave	5457 662554	9501	107445	210363	460132	0.500 60.0	1.00	10.0	20.0	40.0
Dichlorofluoromethane	FB	Ave	13064 1532802	22455	247042	481794	1045233	0.500 60.0	1.00	10.0	20.0	40.0
Trichlorofluoromethane	FB	Ave	5813 1016517	11937	174532	346361	673500	0.500 60.0	1.00	10.0	20.0	40.0
Ethyl ether	FB	Ave	5466 664729	10804	109487	209107	460345	0.500 60.0	1.00	10.0	20.0	40.0
Acrolein	FB	Ave	4089 395186	6175	61572	132322	277762	2.50 300	5.00	50.0	100	200
1,1-Dichloroethene	FB	Ave	7935 802449	11561	134745	253180	534914	0.500 60.0	1.00	10.0	20.0	40.0
1,1,2-Trichloro-1,2,2-trifluoroetha ne	FB	Ave	3913 492269	7079	88466	175760	330305	0.500 60.0	1.00	10.0	20.0	40.0
Acetone	FB	Lin1	+++++ 443297	15237	95549	181970	293106	+++++ 120	2.00	20.0	40.0	80.0
Iodomethane	FB	Ave	11250 1262998	18882	205220	392260	848334	0.500 60.0	1.00	10.0	20.0	40.0
Carbon disulfide	FB	Ave	+++++ 2823634	43118	468180	873072	1892009	+++++ 60.0	1.00	10.0	20.0	40.0
3-Chloro-1-propene	FB	Ave	+++++ 604804	8643	98271	186064	406086	+++++ 60.0	1.00	10.0	20.0	40.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269649

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 10:00 Calibration End Date: 03/08/2017 11:56 Calibration ID: 38701

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Methyl acetate	FB	Ave	19873 2000009	37552	353013	680492	1389694	2.50 300	5.00	50.0	100	200
Methylene Chloride	FB	Ave	+++++ 913967	19987	153038	280668	613849	+++++ 60.0	1.00	10.0	20.0	40.0
2-Methyl-2-propanol	FB	Ave	+++++ 459992	9278	81319	165945	331856	+++++ 600	10.0	100	200	400
Acrylonitrile	FB	Ave	22955 2186283	38638	374445	728441	1524897	5.00 600	10.0	100	200	400
trans-1,2-Dichloroethene	FB	Ave	10522 903659	14749	148153	277185	609536	0.500 60.0	1.00	10.0	20.0	40.0
Methyl tert-butyl ether	FB	Ave	18966 2110226	33242	356231	674545	1452926	0.500 60.0	1.00	10.0	20.0	40.0
Hexane	FB	Ave	+++++ 792881	12293	154023	322240	540532	+++++ 60.0	1.00	10.0	20.0	40.0
1,1-Dichloroethane	FB	Ave	12976 1595327	22827	260284	483200	1069118	0.500 60.0	1.00	10.0	20.0	40.0
Vinyl acetate	FB	Ave	11241 1167315	19600	196566	375918	822923	0.500 60.0	1.00	10.0	20.0	40.0
cis-1,2-Dichloroethene	FB	Ave	9233 999338	14807	162412	302161	670339	0.500 60.0	1.00	10.0	20.0	40.0
2,2-Dichloropropane	FB	Ave	7871 1060636	16820	186375	341440	726884	0.500 60.0	1.00	10.0	20.0	40.0
2-Butanone (MEK)	FB	Ave	6161 492164	9913	95609	185628	335474	1.00 120	2.00	20.0	40.0	80.0
Chlorobromomethane	FB	Ave	3461 411367	6320	67641	125252	275178	0.500 60.0	1.00	10.0	20.0	40.0
Tetrahydrofuran	FB	Ave	+++++ 296314	4823	51747	100292	204821	+++++ 120	2.00	20.0	40.0	80.0
Chloroform	FB	Ave	11412 1423179	21989	235247	432290	952349	0.500 60.0	1.00	10.0	20.0	40.0
1,1,1-Trichloroethane	FB	Ave	9445 1185569	17724	193699	368417	787251	0.500 60.0	1.00	10.0	20.0	40.0
Cyclohexane	FB	Ave	10987 1331898	19306	234187	474415	889446	0.500 60.0	1.00	10.0	20.0	40.0
1,1-Dichloropropene	FB	Ave	11733 1175350	17541	196376	374564	782465	0.500 60.0	1.00	10.0	20.0	40.0
Carbon tetrachloride	FB	Ave	6887 969389	14108	161690	309521	652222	0.500 60.0	1.00	10.0	20.0	40.0
Isobutyl alcohol	FB	Ave	3077 375788	7242	65286	139058	265262	12.5 1500	25.0	250	500	1000
Benzene	FB	Ave	29807 3521603	51633	571237	1070650	2356052	0.500 60.0	1.00	10.0	20.0	40.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269649

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 10:00 Calibration End Date: 03/08/2017 11:56 Calibration ID: 38701

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
1,2-Dichloroethane	FB	Ave	8150 946717	15066	158938	295981	645637	0.500 60.0	1.00	10.0	20.0	40.0
n-Heptane	FB	Lin1	+++++ 346932	36585	94435	166050	243414	+++++ 60.0	1.00	10.0	20.0	40.0
Trichloroethene	FB	Ave	8282 851673	13294	142245	265024	571449	0.500 60.0	1.00	10.0	20.0	40.0
Methylcyclohexane	FB	Ave	8376 1087416	15105	193808	402470	730685	0.500 60.0	1.00	10.0	20.0	40.0
1,2-Dichloropropane	FB	Ave	5518 817531	11959	133528	249231	558189	0.500 60.0	1.00	10.0	20.0	40.0
Dibromomethane	FB	Ave	3922 396075	6461	64350	125175	270217	0.500 60.0	1.00	10.0	20.0	40.0
1,4-Dioxane	FB	Ave	+++++ 112459	1881	19404	37397	76927	+++++ 1200	20.0	200	400	800
Dichlorobromomethane	FB	Ave	7053 963272	14474	154223	295036	650540	0.500 60.0	1.00	10.0	20.0	40.0
2-Chloroethyl vinyl ether	FB	Ave	5853 735859	11232	120475	239729	505879	1.00 120	2.00	20.0	40.0	80.0
cis-1,3-Dichloropropene	FB	Ave	11074 1304042	18007	206536	382842	862630	0.500 60.0	1.00	10.0	20.0	40.0
4-Methyl-2-pentanone (MIBK)	FB	Ave	9949 932838	17319	177453	352667	672855	1.00 120	2.00	20.0	40.0	80.0
Toluene	CBNZ d5	Ave	28340 3514611	50678	572833	1068732	2365283	0.500 60.0	1.00	10.0	20.0	40.0
trans-1,3-Dichloropropene	CBNZ d5	Ave	9782 1023168	14493	168887	318082	701926	0.500 60.0	1.00	10.0	20.0	40.0
Ethyl methacrylate	CBNZ d5	Ave	6540 770633	12739	140123	269418	553871	0.500 60.0	1.00	10.0	20.0	40.0
1,1,2-Trichloroethane	CBNZ d5	Ave	4807 541029	7910	89938	175118	380856	0.500 60.0	1.00	10.0	20.0	40.0
Tetrachloroethene	CBNZ d5	Ave	5629 583389	8436	97756	181930	395531	0.500 60.0	1.00	10.0	20.0	40.0
1,3-Dichloropropane	CBNZ d5	Ave	8983 1038320	16036	174556	335931	714494	0.500 60.0	1.00	10.0	20.0	40.0
2-Hexanone	CBNZ d5	Ave	7251 694863	12803	144575	292872	487735	1.00 120	2.00	20.0	40.0	80.0
Chlorodibromomethane	CBNZ d5	Ave	4862 640066	8858	101582	195995	430702	0.500 60.0	1.00	10.0	20.0	40.0
Ethylene Dibromide	CBNZ d5	Ave	5380 526392	8396	89172	170665	363380	0.500 60.0	1.00	10.0	20.0	40.0
Chlorobenzene	CBNZ d5	Ave	21435 2219749	31408	358166	673698	1500534	0.500 60.0	1.00	10.0	20.0	40.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269649

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 10:00 Calibration End Date: 03/08/2017 11:56 Calibration ID: 38701

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
1,1,1,2-Tetrachloroethane	CBNZ d5	Ave	6224 767906	9704	124366	233229	520141	0.500 60.0	1.00	10.0	20.0	40.0
Ethylbenzene	CBNZ d5	Ave	9983 1199011	17392	197254	365971	799053	0.500 60.0	1.00	10.0	20.0	40.0
m-Xylene & p-Xylene	CBNZ d5	Ave	13890 1506627	20790	241420	460496	1005430	0.500 60.0	1.00	10.0	20.0	40.0
o-Xylene	CBNZ d5	Ave	13468 1520769	20977	244367	465219	1046325	0.500 60.0	1.00	10.0	20.0	40.0
Styrene	CBNZ d5	Ave	22234 2569399	34316	419412	785041	1747299	0.500 60.0	1.00	10.0	20.0	40.0
Bromoform	CBNZ d5	Ave	2474 357550	5378	58579	113437	242428	0.500 60.0	1.00	10.0	20.0	40.0
Isopropylbenzene	CBNZ d5	Ave	30692 3795919	47941	606346	1120338	2428735	0.500 60.0	1.00	10.0	20.0	40.0
1,1,2,2-Tetrachloroethane	DCBd 4	Ave	6339 680972	9957	118108	220694	444918	0.500 60.0	1.00	10.0	20.0	40.0
Bromobenzene	DCBd 4	Ave	9649 873193	12372	144763	258455	561865	0.500 60.0	1.00	10.0	20.0	40.0
1,2,3-Trichloropropane	DCBd 4	Ave	1512 198812	2964	35206	64932	132346	0.500 60.0	1.00	10.0	20.0	40.0
trans-1,4-Dichloro-2-butene	DCBd 4	Ave	+++++ 170805	1689	29117	53089	111830	+++++ 60.0	1.00	10.0	20.0	40.0
N-Propylbenzene	DCBd 4	Ave	7807 976376	12547	159781	290362	624927	0.500 60.0	1.00	10.0	20.0	40.0
2-Chlorotoluene	DCBd 4	Ave	6683 861821	12180	139559	257520	565620	0.500 60.0	1.00	10.0	20.0	40.0
1,3,5-Trimethylbenzene	DCBd 4	Ave	24644 3115350	39247	485907	885315	2015967	0.500 60.0	1.00	10.0	20.0	40.0
4-Chlorotoluene	DCBd 4	Ave	8371 905522	12697	146569	263293	590864	0.500 60.0	1.00	10.0	20.0	40.0
tert-Butylbenzene	DCBd 4	Ave	24184 2642504	35152	417685	755457	1713665	0.500 60.0	1.00	10.0	20.0	40.0
1,2,4-Trimethylbenzene	DCBd 4	Ave	27757 3262770	42773	507603	929989	2054828	0.500 60.0	1.00	10.0	20.0	40.0
sec-Butylbenzene	DCBd 4	Ave	28133 3471983	45072	544540	1007699	2162779	0.500 60.0	1.00	10.0	20.0	40.0
1,3-Dichlorobenzene	DCBd 4	Ave	16827 1707362	22190	270320	514521	1074020	0.500 60.0	1.00	10.0	20.0	40.0
4-Isopropyltoluene	DCBd 4	Ave	25298 3002059	39450	467510	899848	1867574	0.500 60.0	1.00	10.0	20.0	40.0
1,4-Dichlorobenzene	DCBd 4	Ave	18696 1724125	24126	279655	528857	1100683	0.500 60.0	1.00	10.0	20.0	40.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Canton Job No.: 240-76348-1 Analy Batch No.: 269649

SDG No.:

Instrument ID: A3UX16 GC Column: DB-624 ID: 0.18(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/08/2017 10:00 Calibration End Date: 03/08/2017 11:56 Calibration ID: 38701

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
n-Butylbenzene	DCBd 4	Ave	21550 2503872	31567	386793	740540	1536569	0.500 60.0	1.00	10.0	20.0	40.0
1,2-Dichlorobenzene	DCBd 4	Ave	15081 1597094	22474	257257	498079	1018230	0.500 60.0	1.00	10.0	20.0	40.0
1,2-Dibromo-3-Chloropropane	DCBd 4	Ave	+++++ 113109	1127	18498	37211	74560	+++++ 60.0	1.00	10.0	20.0	40.0
1,2,4-Trichlorobenzene	DCBd 4	Ave	+++++ 814042	11794	126419	248398	568777	+++++ 60.0	1.00	10.0	20.0	40.0
Hexachlorobutadiene	DCBd 4	Ave	4079 327414	5507	49705	98487	220182	0.500 60.0	1.00	10.0	20.0	40.0
Naphthalene	DCBd 4	Ave	+++++ 1723633	25131	262107	554730	1192625	+++++ 60.0	1.00	10.0	20.0	40.0
1,2,3-Trichlorobenzene	DCBd 4	Ave	+++++ 605654	8776	94116	191115	418595	+++++ 60.0	1.00	10.0	20.0	40.0
Dibromofluoromethane (Surr)	FB	Ave	+++++ 711519	10782	113630	219681	483071	+++++ 60.0	1.00	10.0	20.0	40.0
1,2-Dichloroethane-d4 (Surr)	FB	Ave	+++++ 749106	11156	126532	238378	522047	+++++ 60.0	1.00	10.0	20.0	40.0
Toluene-d8 (Surr)	CBNZ d5	Ave	+++++ 2965794	41953	482714	908114	2024022	+++++ 60.0	1.00	10.0	20.0	40.0
4-Bromofluorobenzene (Surr)	CBNZ d5	Ave	+++++ 1073793	16113	173841	328785	712309	+++++ 60.0	1.00	10.0	20.0	40.0

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 240-269880/6

Matrix: Water | Lab File ID: UXJ0685.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 12:39

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269880 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0	U	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	1.0	U	1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	88		73-124
1868-53-7	Dibromofluoromethane (Surr)	89		80-120
460-00-4	4-Bromofluorobenzene (Surr)	85		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	84		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 240-269880/6

Matrix: Water | Lab File ID: UXJ0685.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 12:39

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269880 | Units: ug/L

Number TICs Found: 0 | TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 240-269880/6

Matrix: Water | Lab File ID: UXJ0685.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 12:39

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269880 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 240-269898/8

Matrix: Water | Lab File ID: UXM1088.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 15:56

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	1.0	U	1.0	0.23
79-00-5	1,1,2-Trichloroethane	1.0	U	1.0	0.34
75-34-3	1,1-Dichloroethane	1.0	U	1.0	0.25
75-35-4	1,1-Dichloroethene	1.0	U	1.0	0.27
526-73-8	1,2,3-Trimethylbenzene	5.0	U	5.0	0.22
120-82-1	1,2,4-Trichlorobenzene	1.0	U	1.0	0.27
95-63-6	1,2,4-Trimethylbenzene	1.0	U	1.0	0.24
107-06-2	1,2-Dichloroethane	1.0	U	1.0	0.30
108-67-8	1,3,5-Trimethylbenzene	1.0	U	1.0	0.24
71-43-2	Benzene	1.0	U	1.0	0.28
56-23-5	Carbon tetrachloride	1.0	U	1.0	0.35
67-66-3	Chloroform	1.0	U	1.0	0.31
156-59-2	cis-1,2-Dichloroethene	1.0	U	1.0	0.30
75-71-8	Dichlorodifluoromethane	1.0	U	1.0	0.50
100-41-4	Ethylbenzene	1.0	U	1.0	0.26
1634-04-4	Methyl tert-butyl ether	1.0	U	1.0	0.27
75-09-2	Methylene Chloride	1.0	U	1.0	0.53
91-20-3	Naphthalene	1.0	U	1.0	0.25
127-18-4	Tetrachloroethene	1.0	U	1.0	0.30
108-88-3	Toluene	1.0	U	1.0	0.23
156-60-5	trans-1,2-Dichloroethene	1.0	U	1.0	0.29
79-01-6	Trichloroethene	1.0	U	1.0	0.33
75-01-4	Vinyl chloride	1.0	U	1.0	0.45
1330-20-7	Xylenes, Total	2.0	U	2.0	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
2037-26-5	Toluene-d8 (Surr)	99		73-124
1868-53-7	Dibromofluoromethane (Surr)	101		80-120
460-00-4	4-Bromofluorobenzene (Surr)	105		73-120
17060-07-0	1,2-Dichloroethane-d4 (Surr)	101		63-132

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton Job No.: 240-76348-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 240-269898/8

Matrix: Water Lab File ID: UXM1088.D

Analysis Method: 8260C Date Collected:

Sample wt/vol: 5(mL) Date Analyzed: 03/09/2017 15:56

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-624 ID: 0.18(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 269898 Units: ug/L

Number TICs Found: 0 TIC Result Total: 0

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
	Tentatively Identified Compound		None		

FORM I-TIC 8260C

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET
TARGETED TENATIVELY IDENTIFIED COMPOUNDS

Lab Name: TestAmerica Canton | Job No.: 240-76348-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 240-269898/8

Matrix: Water | Lab File ID: UXM1088.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 5(mL) | Date Analyzed: 03/09/2017 15:56

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: DB-624 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 269898 | Units: ug/L

CAS NO.	COMPOUND NAME	RT	RESULT	Q	MATCH QUALITY
75-45-6	Chlorodifluoromethane TIC		1.0	U	

APPENDIX D—ANALYTICAL DATA TABLES

Table D-1
Chemical Results for Water Samples - March 2017
Building A Basement
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	WS-BRS-A	WS-ELS-A	WS-HRS1-A	WS-HRS2-A	WS-HRS3-A	WS-HRS4-A	WS-HRS5-A	WS-HRS6-A
SAMPLE ID	WS-BRS-A-030317	WS-ELS-A-030317	WS-HRS1-A-030217	WS-HRS2-A-030217	WS-HRS3-A-030217	WS-HRS4-A-030217	WS-HRS5-A-030217	WS-HRS6-A-030217
SAMPLE DATE	20170303	20170303	20170302	20170302	20170302	20170302	20170302	20170302
MATRIX	SU	SU	SU	SU	SU	SU	SU	SU
VOLATILES (UG/L)								
1,1,1-TRICHLOROETHANE	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	58 U	0.23 U
1,1,2-TRICHLOROETHANE	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	85 U	0.34 U
1,1-DICHLOROETHANE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	63 U	0.25 U
1,1-DICHLOROETHENE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.99 J	390	0.27 U
1,2,3-TRIMETHYLBENZENE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	55 U	0.22 U
1,2,4-TRICHLOROBENZENE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	68 U	0.27 U
1,2,4-TRIMETHYLBENZENE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	60 U	0.24 U
1,2-DICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	75 U	0.3 U
1,3,5-TRIMETHYLBENZENE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	60 U	0.24 U
BENZENE	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	70 U	0.28 U
CARBON TETRACHLORIDE	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	88 U	0.35 U
CHLORODIFLUOROMETHANE	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	250 UJ	1 UJ
CHLOROFORM	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	78 U	0.31 U
CIS-1,2-DICHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.47 J	76 J	0.3 U
DICHLORODIFLUOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	130 U	0.5 U
ETHYLBENZENE	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	65 U	0.26 U
METHYL TERT-BUTYL ETHER	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	68 U	0.27 U
METHYLENE CHLORIDE	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	130 U	0.53 U
NAPHTHALENE	0.25 U	0.25 U	0.25 U	0.25 U	0.69 J	0.25 U	63 U	0.25 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	75 U	0.3 U
TOLUENE	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	58 U	0.23 U
TOTAL XYLENES	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	60 U	0.24 U
TRANS-1,2-DICHLOROETHENE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	73 U	0.29 U
TRICHLOROETHENE	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	1.1	5100	14
VINYL CHLORIDE	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	110 U	0.45 U
TENTATIVELY IDENTIFIED COMPOUNDS-VOLATILES (UG/L)								
DODECANE	NA	NA	NA	NA	NA	NA	NA	NA
DODECANE, 2-METHYL-6-PROPYL-	NA	NA	NA	NA	NA	NA	NA	NA
DODECANE, 3-METHYL-	NA	NA	NA	NA	NA	NA	NA	NA
DODECANE, 4-METHYL-	NA	NA	NA	NA	NA	NA	NA	NA
FORMAMIDE, N-METHYLTHIO	NA	NA	NA	NA	NA	NA	NA	NA
TETRADECANE	2 NJ	NA	NA	NA	NA	NA	NA	NA
TRIDECANE	3.9 NJ	NA	NA	NA	NA	NA	NA	NA
TRIDECANE, 2-METHYL-	NA	NA	NA	NA	NA	NA	NA	NA
UNDECANE, 2,4-DIMETHYL-	NA	NA	NA	NA	NA	NA	NA	NA
UNKNOWN [1.81]	NA	NA	NA	NA	NA	NA	NA	NA
UNKNOWN [13.32]	NA	NA	NA	NA	NA	NA	NA	NA

J - positive result is estimated
µg/L - micrograms per liter
NA - tentatively identified compound (TIC) not reported or not detected
NJ - the instrument was not calibrated for these tentatively identified compounds, therefore, the detected compounds were qualified as estimated and assumed to be presumptively present.
U - the analyte is considered not detected at the reported value.

Table D-1
Chemical Results for Water Samples - March 2017
Building A Basement
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	WS-HRS7-A	WS-LS5-A	WS-SD1-A	WS-SD2-A	WS-SD3-A	WS-SP1-A	WS-SP1A-A	QC
SAMPLE ID	WS-HRS7-A-030217	WS-LS5-A-030217	WS-SD1-A-030217	WS-SD2-A-030217	WS-SD3-A-030217	WS-SP1-A-030217	WS-SP1A-A-030317	TB-030317
SAMPLE DATE	20170302	20170302	20170302	20170302	20170302	20170302	20170303	20170303
MATRIX	SU	SU	SU	SU	SU	SU	SU	QC
VOLATILES (UG/L)								
1,1,1-TRICHLOROETHANE	0.23 U	0.23 U	7.6	0.23 U	0.23 U	1.2 U	4.6 U	0.23 U
1,1,2-TRICHLOROETHANE	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	1.7 U	6.8 U	0.34 U
1,1-DICHLOROETHANE	0.99 J	0.25 U	0.26 J	0.25 U	0.25 U	5.7	5.1 J	0.25 U
1,1-DICHLOROETHENE	7.8	0.67 J	1	0.27 U	0.27 U	47	88	0.27 U
1,2,3-TRIMETHYLBENZENE	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	1.1 U	4.4 U	0.22 U
1,2,4-TRICHLOROBENZENE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	1.4 U	5.4 U	0.27 U
1,2,4-TRIMETHYLBENZENE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	1.2 U	4.8 U	0.24 U
1,2-DICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	1.5 U	6 U	0.3 U
1,3,5-TRIMETHYLBENZENE	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	1.2 U	4.8 U	0.24 U
BENZENE	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	1.4 U	5.6 U	0.28 U
CARBON TETRACHLORIDE	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	1.8 U	7 U	0.35 U
CHLORODIFLUOROMETHANE	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	5 UJ	20 UJ	1 UJ
CHLOROFORM	2.5	10	0.55 J	0.31 U	0.31 U	5.6	6.2 U	0.31 U
CIS-1,2-DICHLOROETHENE	3	0.3 U	0.3 U	0.3 U	0.3 U	13	32	0.3 U
DICHLORODIFLUOROMETHANE	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 U	2.5 U	10 U	0.5 U
ETHYLBENZENE	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	1.3 U	5.2 U	0.26 U
METHYL TERT-BUTYL ETHER	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	1.4 U	5.4 U	0.27 U
METHYLENE CHLORIDE	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	2.7 U	11 U	0.53 U
NAPHTHALENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.3 U	5 U	0.25 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	1.5 U	6 U	0.3 U
TOLUENE	0.23 U	1	0.23 U	0.23 U	0.23 U	1.2 U	4.6 U	0.23 U
TOTAL XYLENES	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	1.2 U	4.8 U	0.24 U
TRANS-1,2-DICHLOROETHENE	0.33 J	0.29 U	0.29 U	0.29 U	0.29 U	1.5 U	5.8 U	0.29 U
TRICHLOROETHENE	41	2.6	0.7 J	0.33 U	0.33 U	160	440	0.33 U
VINYL CHLORIDE	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	2.3 U	9 U	0.45 U
TENTATIVELY IDENTIFIED COMPOUNDS-VOLATILES (UG/L)								
DODECANE	NA	54 NJ	NA	NA	NA	NA	NA	NA
DODECANE, 2-METHYL-6-PROPYL-	NA	30 NJ	NA	NA	NA	NA	NA	NA
DODECANE, 3-METHYL-	NA	39 NJ	NA	NA	NA	NA	NA	NA
DODECANE, 4-METHYL-	NA	29 NJ	NA	NA	NA	NA	NA	NA
FORMAMIDE, N-METHYLTHIO	NA	NA	1.1 NJ	NA	NA	NA	NA	NA
TETRADECANE	NA	58 NJ	NA	NA	NA	NA	NA	NA
TRIDECANE	NA	110 NJ	NA	NA	NA	NA	NA	NA
TRIDECANE, 2-METHYL-	NA	21 NJ	NA	NA	NA	NA	NA	NA
UNDECANE, 2,4-DIMETHYL-	NA	39 NJ	NA	NA	NA	NA	NA	NA
UNKNOWN [1.81]	NA	NA	NA	1.2 NJ	NA	NA	NA	NA
UNKNOWN [13.32]	NA	31 NJ	NA	NA	NA	NA	NA	NA

J - positive result is estimated
µg/L - micrograms per liter
NA - tentatively identified compound (TIC) not reported or n
NJ - the instrument was not calibrated for these tentatively i
U - the analyte is considered not detected at the reported va

Table D-2
Positive Detects for Water Samples - March 2017
Building A Basement
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	WS-BRS-A	WS-ELS-A	WS-HRS1-A	WS-HRS2-A	WS-HRS3-A	WS-HRS4-A
SAMPLE ID	WS-BRS-A-030317	WS-ELS-A-030317	WS-HRS1-A-030217	WS-HRS2-A-030217	WS-HRS3-A-030217	WS-HRS4-A-030217
SAMPLE DATE	20170303	20170303	20170302	20170302	20170302	20170302
MATRIX	SU	SU	SU	SU	SU	SU
VOLATILES (UG/L)						
1,1,1-TRICHLOROETHANE	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
1,1-DICHLOROETHANE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,1-DICHLOROETHENE	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.99 J
CHLOROFORM	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
CIS-1,2-DICHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.47 J
NAPHTHALENE	0.25 U	0.25 U	0.25 U	0.25 U	0.69 J	0.25 U
TOLUENE	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
TRANS-1,2-DICHLOROETHENE	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
TRICHLOROETHENE	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	1.1
TENTATIVELY IDENTIFIED COMPOUNDS-VOLATILES (UG/L)						
DODECANE	NA	NA	NA	NA	NA	NA
DODECANE, 2-METHYL-6-PROPYL-	NA	NA	NA	NA	NA	NA
DODECANE, 3-METHYL-	NA	NA	NA	NA	NA	NA
DODECANE, 4-METHYL-	NA	NA	NA	NA	NA	NA
FORMAMIDE, N-METHYLTHIO	NA	NA	NA	NA	NA	NA
TETRADECANE	2 NJ	NA	NA	NA	NA	NA
TRIDECANE	3.9 NJ	NA	NA	NA	NA	NA
TRIDECANE, 2-METHYL-	NA	NA	NA	NA	NA	NA
UNDECANE, 2,4-DIMETHYL-	NA	NA	NA	NA	NA	NA
UNKNOWN [1.81]	NA	NA	NA	NA	NA	NA
UNKNOWN [13.32]	NA	NA	NA	NA	NA	NA

Gray shaded results exceed maximum contaminant level of 5 µg/L which is a drinking water standard
J - positive result is estimated
µg/L - micrograms per liter
NA - tentatively identified compound (TIC) not reported or not detected
NJ - the instrument was not calibrated for these tentatively identified compounds, therefore, the detected compounds were qualified as estimated and assumed to be presumptively present.
U - the analyte is considered not detected at the reported value

Table D-2
Positive Detects for Water Samples - March 2017
Building A Basement
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	WS-HRS5-A	WS-HRS6-A	WS-HRS7-A	WS-LS5-A	WS-SD1-A	WS-SD2-A
SAMPLE ID	WS-HRS5-A-030217	WS-HRS6-A-030217	WS-HRS7-A-030217	WS-LS5-A-030217	WS-SD1-A-030217	WS-SD2-A-030217
SAMPLE DATE	20170302	20170302	20170302	20170302	20170302	20170302
MATRIX	SU	SU	SU	SU	SU	SU
VOLATILES (UG/L)						
1,1,1-TRICHLOROETHANE	58 U	0.23 U	0.23 U	0.23 U	7.6	0.23 U
1,1-DICHLOROETHANE	63 U	0.25 U	0.99 J	0.25 U	0.26 J	0.25 U
1,1-DICHLOROETHENE	390	0.27 U	7.8	0.67 J	1	0.27 U
CHLOROFORM	78 U	0.31 U	2.5	10	0.55 J	0.31 U
CIS-1,2-DICHLOROETHENE	76 J	0.3 U	3	0.3 U	0.3 U	0.3 U
NAPHTHALENE	63 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TOLUENE	58 U	0.23 U	0.23 U	1	0.23 U	0.23 U
TRANS-1,2-DICHLOROETHENE	73 U	0.29 U	0.33 J	0.29 U	0.29 U	0.29 U
TRICHLOROETHENE	5100	14	41	2.6	0.7 J	0.33 U
TENTATIVELY IDENTIFIED COMPOUNDS-VOLATILES (UG/L)						
DODECANE	NA	NA	NA	54 NJ	NA	NA
DODECANE, 2-METHYL-6-PROPYL-	NA	NA	NA	30 NJ	NA	NA
DODECANE, 3-METHYL-	NA	NA	NA	39 NJ	NA	NA
DODECANE, 4-METHYL-	NA	NA	NA	29 NJ	NA	NA
FORMAMIDE, N-METHYLTHIO	NA	NA	NA	NA	1.1 NJ	NA
TETRADECANE	NA	NA	NA	58 NJ	NA	NA
TRIDECANE	NA	NA	NA	110 NJ	NA	NA
TRIDECANE, 2-METHYL-	NA	NA	NA	21 NJ	NA	NA
UNDECANE, 2,4-DIMETHYL-	NA	NA	NA	39 NJ	NA	NA
UNKNOWN [1.81]	NA	NA	NA	NA	NA	1.2 NJ
UNKNOWN [13.32]	NA	NA	NA	31 NJ	NA	NA

Gray shaded results exceed maximum contaminant level of 5
J - positive result is estimated
µg/L - micrograms per liter
NA - tentatively identified compound (TIC) not reported or nc
NJ - the instrument was not calibrated for these tentatively ic
U - the analyte is considered not detected at the reported val

Table D-2
Positive Detects for Water Samples - March 2017
Building A Basement
Lockheed Martin Middle River Complex, Middle River, Maryland

LOCATION	WS-SD3-A	WS-SP1-A	WS-SP1A-A	QC
SAMPLE ID	WS-SD3-A-030217	WS-SP1-A-030217	WS-SP1A-A-030317	TB-030317
SAMPLE DATE	20170302	20170302	20170303	20170303
MATRIX	SU	SU	SU	QC
VOLATILES (UG/L)				
1,1,1-TRICHLOROETHANE	0.23 U	1.2 U	4.6 U	0.23 U
1,1-DICHLOROETHANE	0.25 U	5.7	5.1 J	0.25 U
1,1-DICHLOROETHENE	0.27 U	47	88	0.27 U
CHLOROFORM	0.31 U	5.6	6.2 U	0.31 U
CIS-1,2-DICHLOROETHENE	0.3 U	13	32	0.3 U
NAPHTHALENE	0.25 U	1.3 U	5 U	0.25 U
TOLUENE	0.23 U	1.2 U	4.6 U	0.23 U
TRANS-1,2-DICHLOROETHENE	0.29 U	1.5 U	5.8 U	0.29 U
TRICHLOROETHENE	0.33 U	160	440	0.33 U
TENTATIVELY IDENTIFIED COMPOUNDS-VOLATILES (UG/L)				
DODECANE	NA	NA	NA	NA
DODECANE, 2-METHYL-6-PROPYL-	NA	NA	NA	NA
DODECANE, 3-METHYL-	NA	NA	NA	NA
DODECANE, 4-METHYL-	NA	NA	NA	NA
FORMAMIDE, N-METHYLTHIO	NA	NA	NA	NA
TETRADECANE	NA	NA	NA	NA
TRIDECANE	NA	NA	NA	NA
TRIDECANE, 2-METHYL-	NA	NA	NA	NA
UNDECANE, 2,4-DIMETHYL-	NA	NA	NA	NA
UNKNOWN [1.81]	NA	NA	NA	NA
UNKNOWN [13.32]	NA	NA	NA	NA

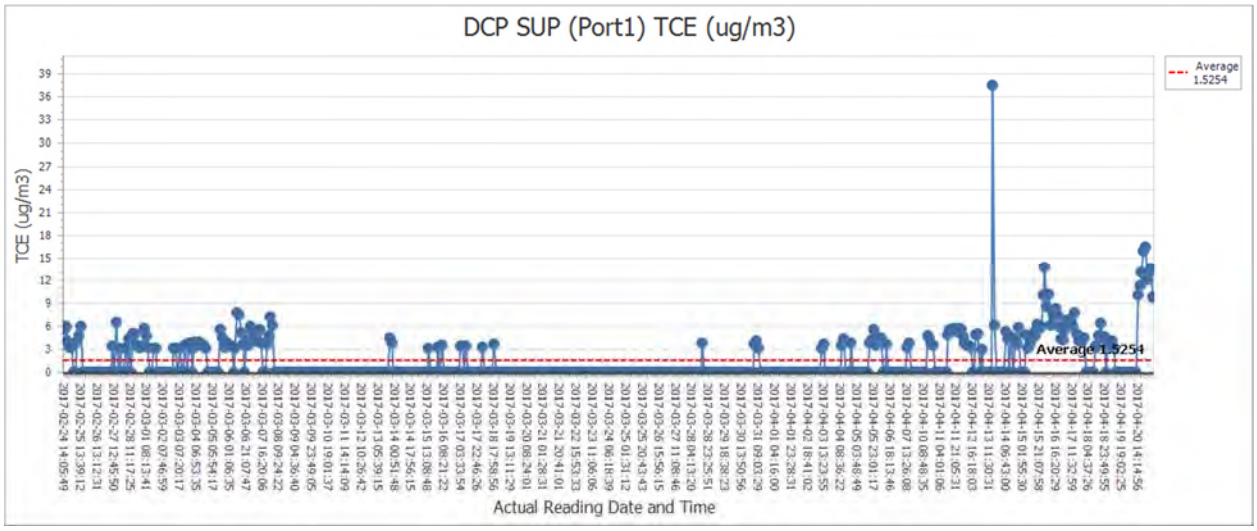
Gray shaded results exceed maximum contaminant level of 5
J - positive result is estimated
µg/L - micrograms per liter
NA - tentatively identified compound (TIC) not reported or nc
NJ - the instrument was not calibrated for these tentatively ic
U - the analyte is considered not detected at the reported val

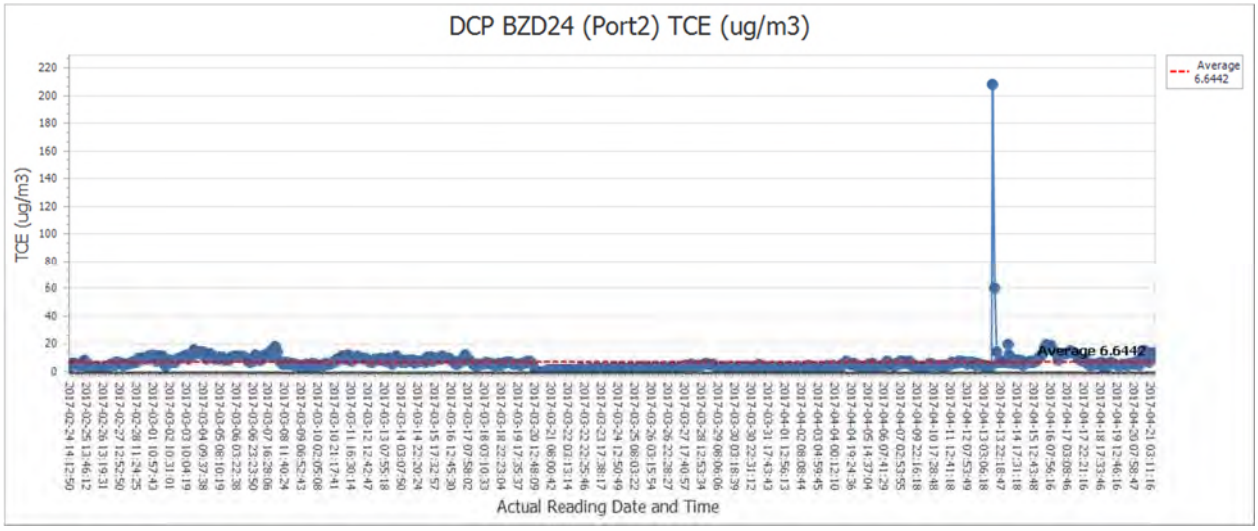
Table D-3
Statistical Summary of Water Samples - March 2017
Building A Basement
Lockheed Martin Middle River Complex, Middle River, Maryland

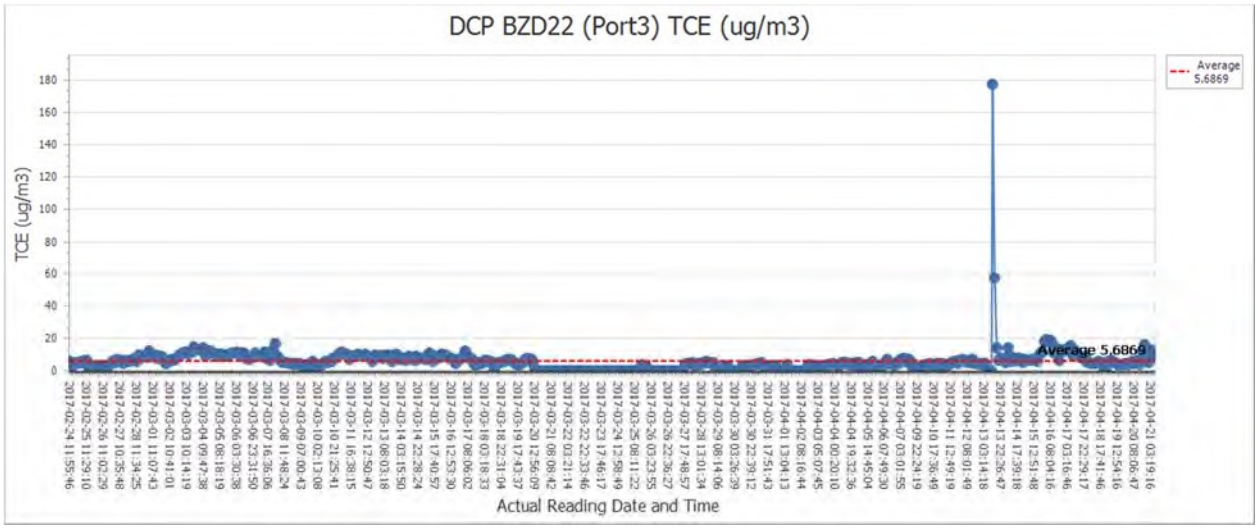
Chemical	Frequency of Detection		Minimum Non-Detect Concentration	Maximum Non-Detect Concentration	Minimum Detected Concentration		Maximum Detected Concentration		Sample of Maximum Detected Sample	Mean of All Samples	Mean of Positive Detects	Standard Deviation	Sample Date
	Number	Percent											
Volatile Organic Compounds (µg/L)													
1,1,1-TRICHLOROETHANE	1/15	7	0.23	58	7.6		7.6		WS-SD1-A-030217	2.72	7.60	7.53	20170302
1,1-DICHLOROETHANE	4/15	27	0.25	63	0.26	J	5.7		WS-SP1-A-030217	2.99	3.01	8.10	20170302
1,1-DICHLOROETHENE	7/15	47	0.27	0.27	0.67	J	390		WS-HRS5-A-030217	35.77	76.49	101.04	20170302
CHLOROFORM	4/15	27	0.31	78	0.55	J	10		WS-LS5-A-030217	4.14	4.66	10.04	20170302
CIS-1,2-DICHLOROETHENE	5/15	33	0.3	0.3	0.47	J	76	J	WS-HRS5-A-030217	8.40	24.89	20.56	20170302
NAPHTHALENE	1/15	7	0.25	63	0.69	J	0.69	J	WS-HRS3-A-030217	2.45	0.69	8.06	20170302
TOLUENE	1/15	7	0.23	58	1		1		WS-LS5-A-030217	2.28	1.00	7.42	20170302
TRANS-1,2-DICHLOROETHENE	1/15	7	0.29	73	0.33	J	0.33	J	WS-HRS7-A-030217	2.81	0.33	9.35	20170302
TRICHLOROETHENE	8/15	53	0.33	0.33	0.7	J	5100		WS-HRS5-A-030217	384.04	719.93	1309.82	20170302
Tentatively Identified Volatile Organic Compounds (µg/L)													
DODECANE	1/1	100	NULL	NULL	54	NJ	54	NJ	WS-LS5-A-030217	54.00	54.00	NULL	20170302
DODECANE, 2-METHYL-6-PROPYL-	1/1	100	NULL	NULL	30	NJ	30	NJ	WS-LS5-A-030217	30.00	30.00	NULL	20170302
DODECANE, 3-METHYL-	1/1	100	NULL	NULL	39	NJ	39	NJ	WS-LS5-A-030217	39.00	39.00	NULL	20170302
DODECANE, 4-METHYL-	1/1	100	NULL	NULL	29	NJ	29	NJ	WS-LS5-A-030217	29.00	29.00	NULL	20170302
FORMAMIDE, N-METHYLTHIO	1/1	100	NULL	NULL	1.1	NJ	1.1	NJ	WS-SD1-A-030217	1.10	1.10	NULL	20170302
TETRADECANE	3/3	100	NULL	NULL	2	NJ	58	NJ	WS-LS5-A-030217	27.00	27.00	28.48	20170302
TRIDECANE	2/2	100	NULL	NULL	3.9	NJ	110	NJ	WS-LS5-A-030217	56.95	56.95	75.02	20170302
TRIDECANE, 2-METHYL-	1/1	100	NULL	NULL	21	NJ	21	NJ	WS-LS5-A-030217	21.00	21.00	NULL	20170302
UNDECANE, 2,4-DIMETHYL-	1/1	100	NULL	NULL	39	NJ	39	NJ	WS-LS5-A-030217	39.00	39.00	NULL	20170302
UNKNOWN [1.81]	1/1	100	NULL	NULL	1.2	NJ	1.2	NJ	WS-SD2-A-030217	1.20	1.20	NULL	20170302
UNKNOWN [13.32]	1/1	100	NULL	NULL	31	NJ	31	NJ	WS-LS5-A-030217	31.00	31.00	NULL	20170302

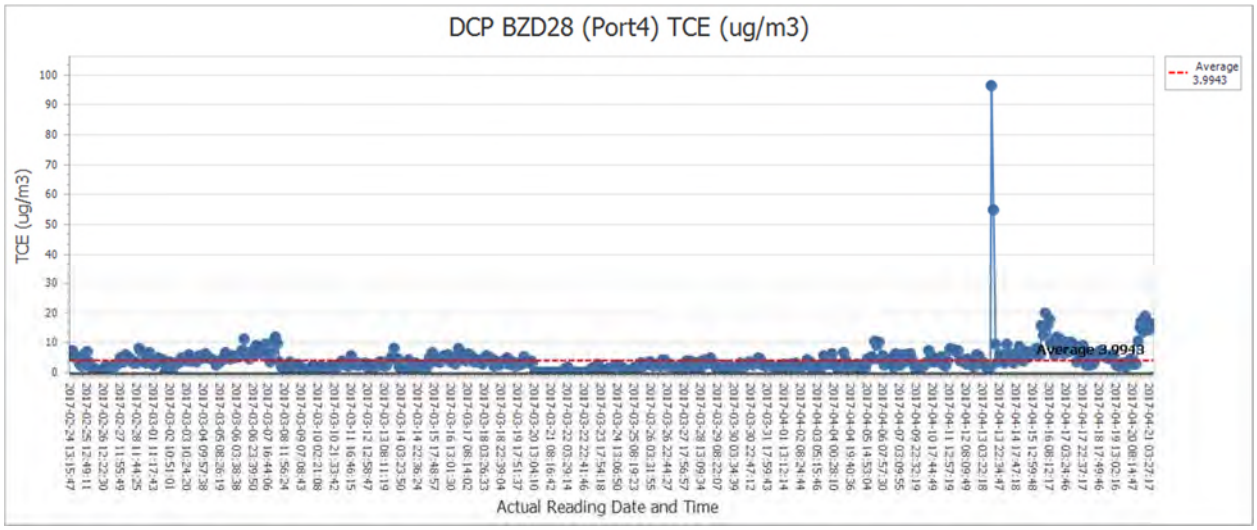
J - positive result is estimated
µg/L - micrograms per liter
NA - tentatively identified compound (TIC) not reported or not detected
NJ - the instrument was not calibrated for these tentatively identified compounds, therefore, the detected compounds were qualified as estimated and assumed to be presumptively present.
U - the analyte is considered not detected at the reported value.

APPENDIX E—INDIVIDUAL SAMPLING-PORT TREND GRAPHS


DCP SUP (Port1) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 1.5254
Average 1.5254


DCP BZD24 (Port2) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 6.6442
Average 6.6442


DCP BZD22 (Port3) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 5.6869
Average 5.6869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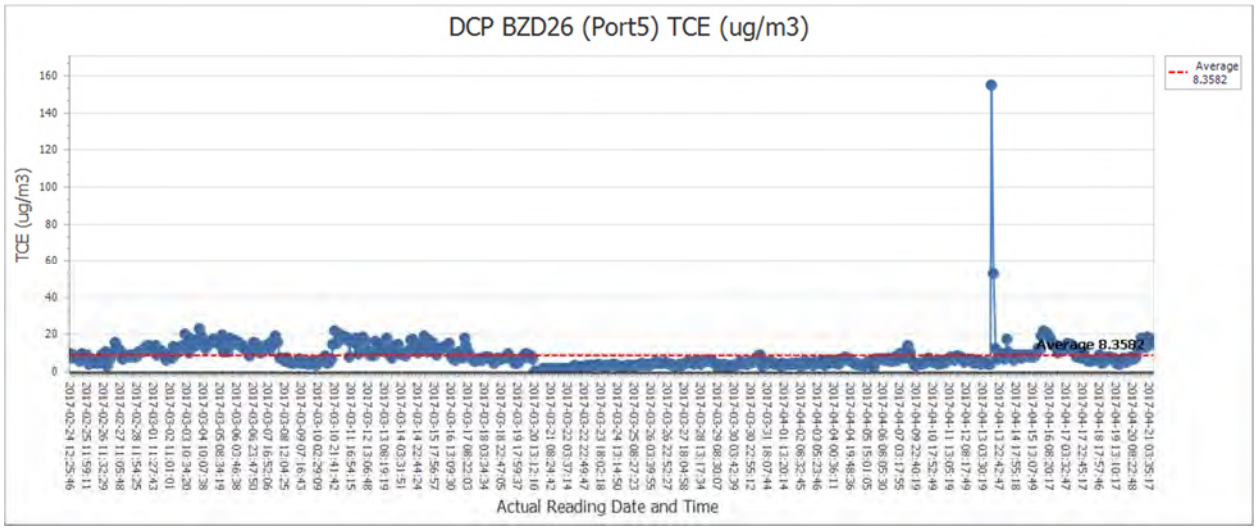
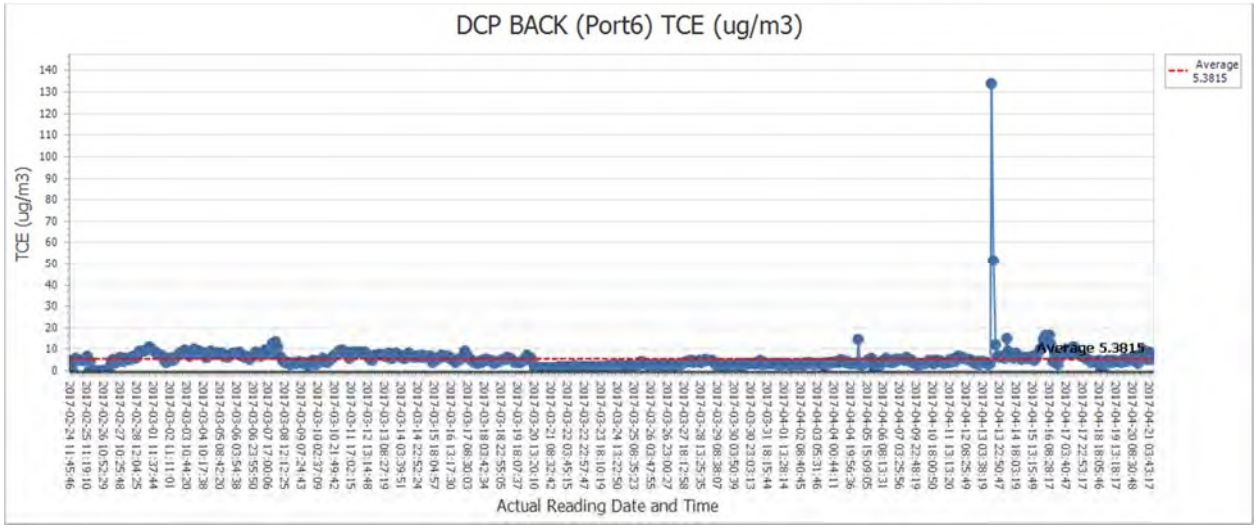
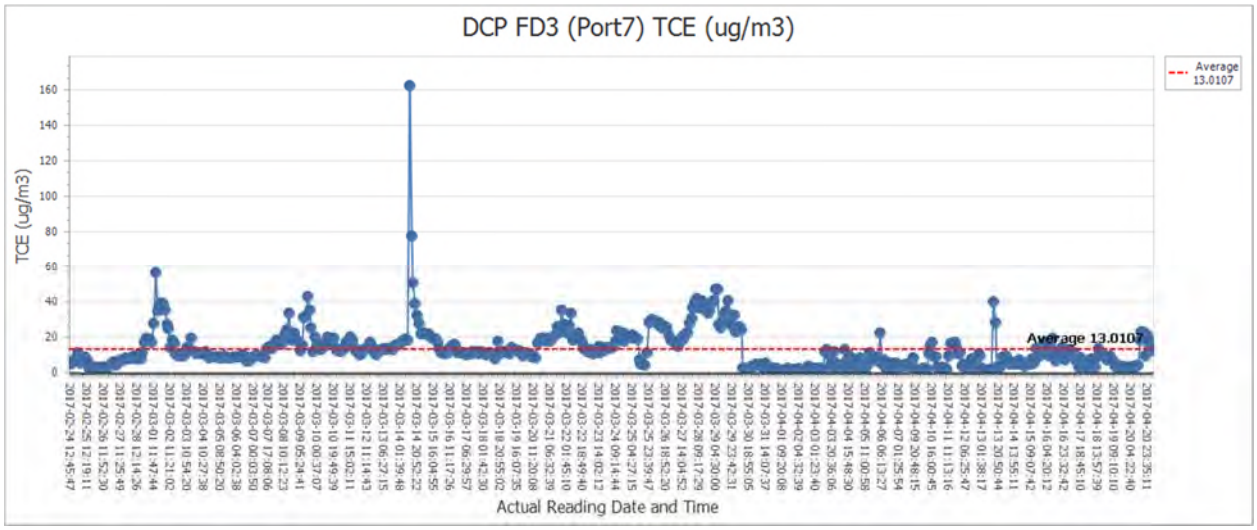
TCE (ug/m3)
Actual Reading Date and Time
Average 3.9943
Average 3.9943


DCP BZD26 (Port5) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 8.3582
Average 8.3582


DCP BACK (Port6) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 5.3815
Average 5.3815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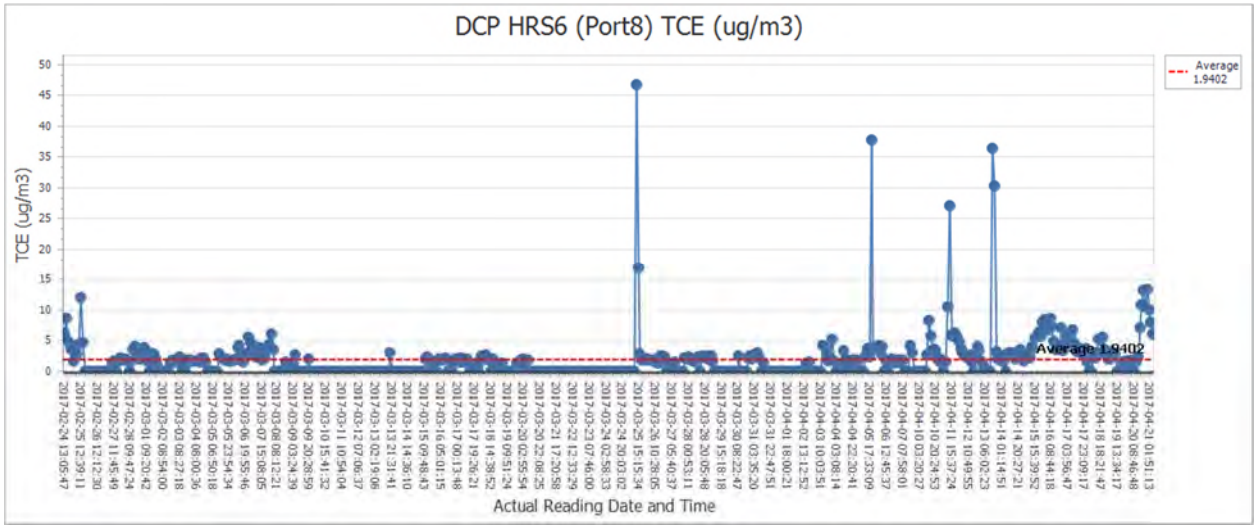
TCE (ug/m3)
Actual Reading Date and Time
Average 13.0107
Average
13.0107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TCE (ug/m3)
Actual Reading Date and Time
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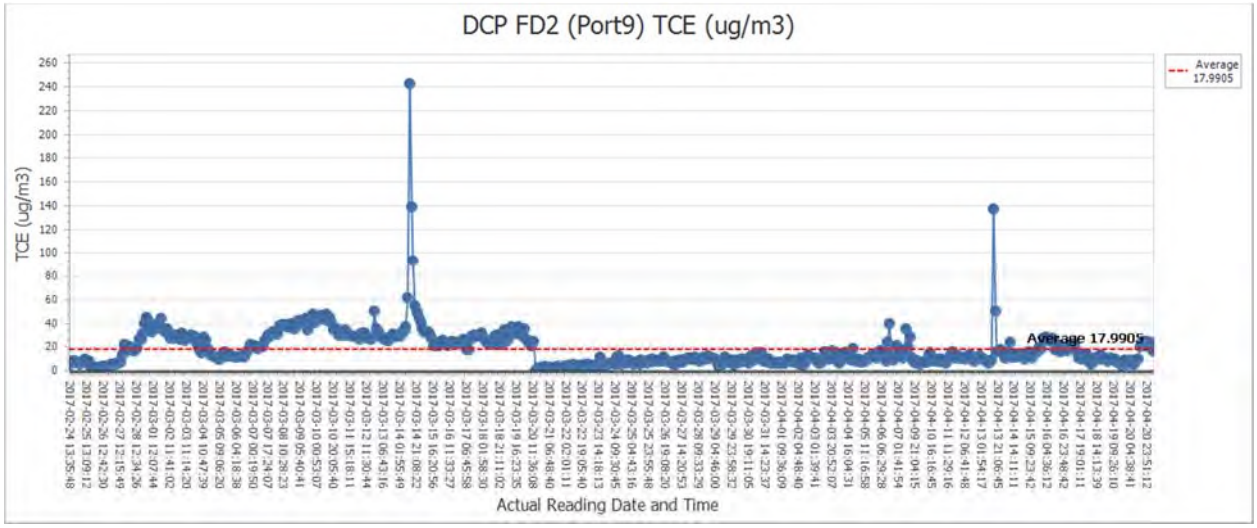
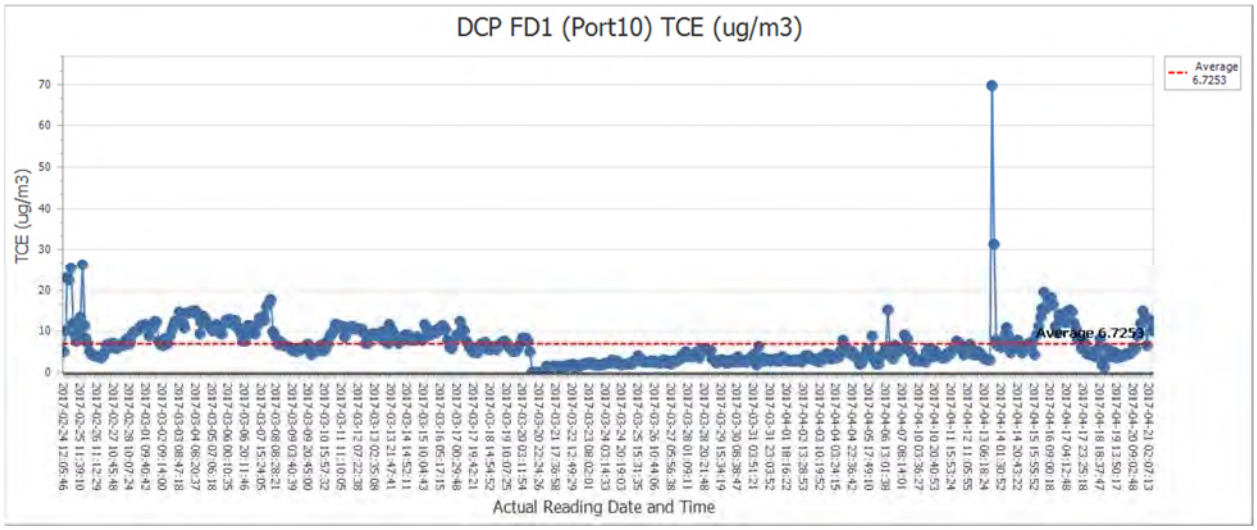
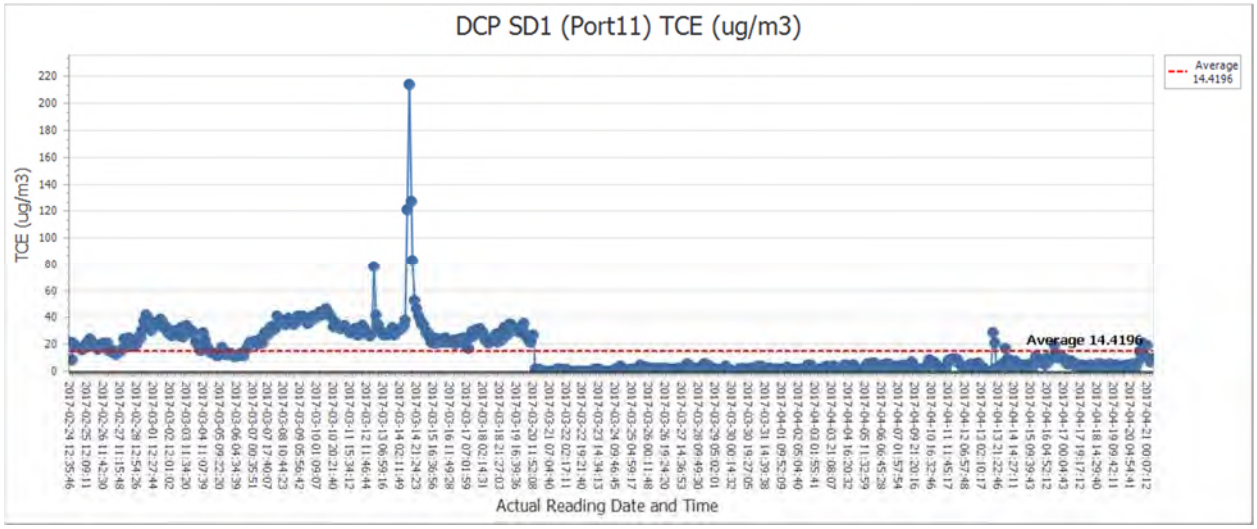
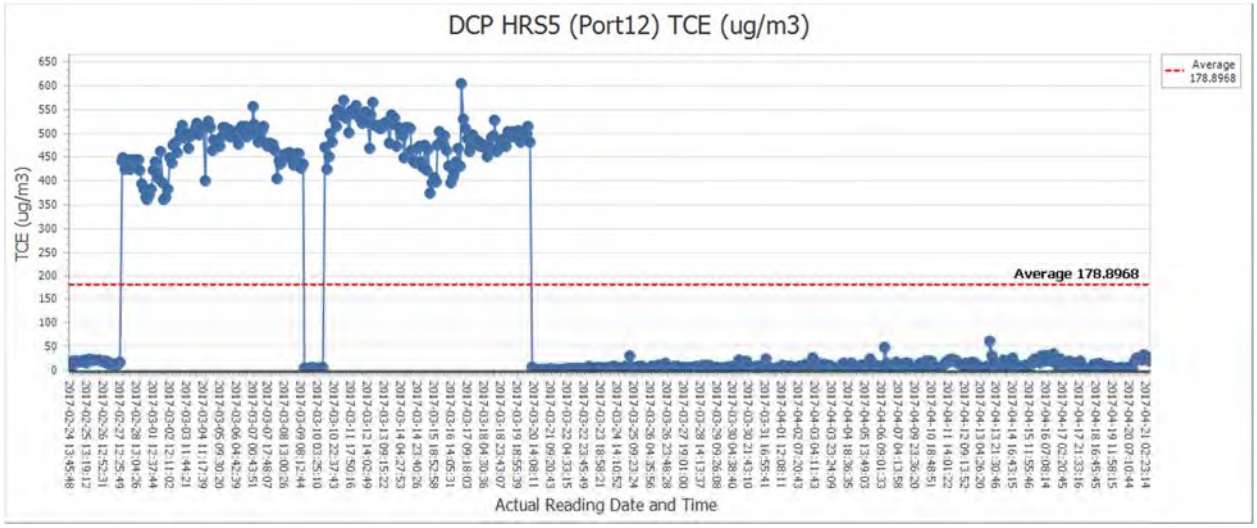
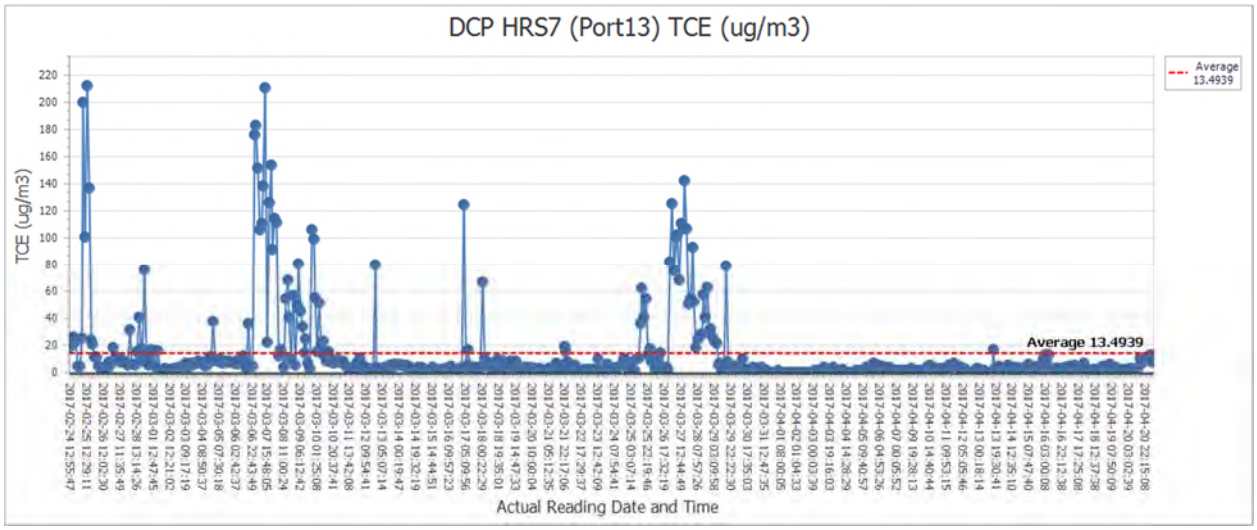
Average
1.9402

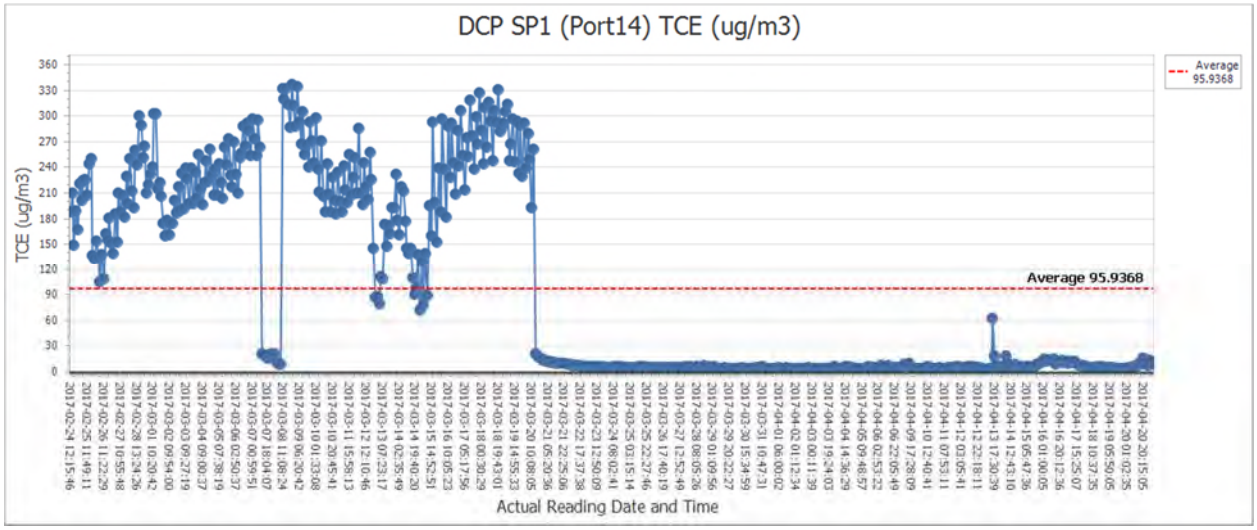

DCP FD2 (Port9) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 17.9905
Average
17.9905

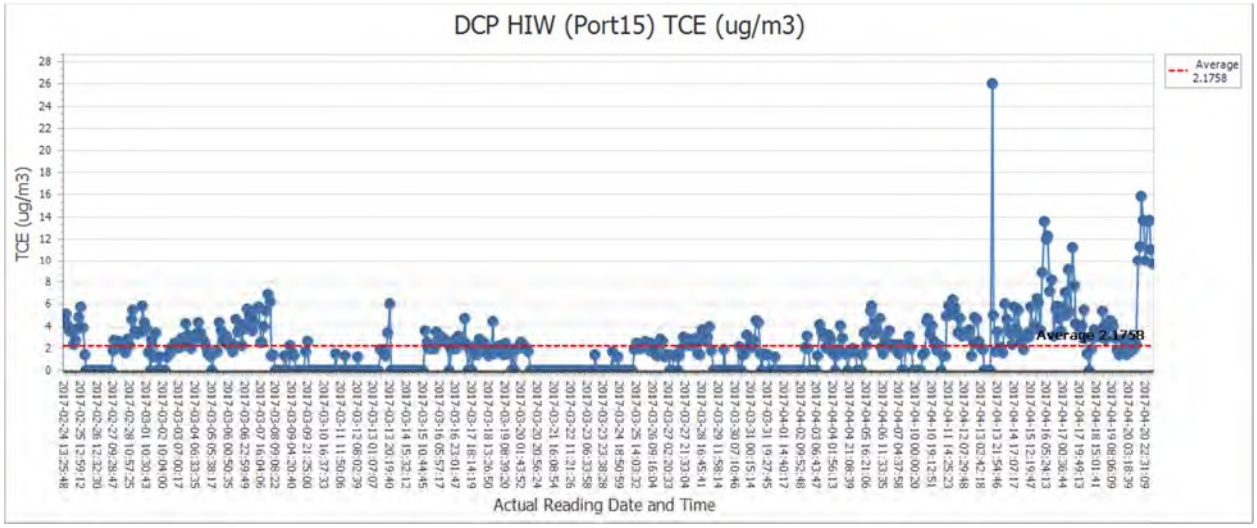

DCP FD1 (Port10) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 6.7253
Average 6.7253

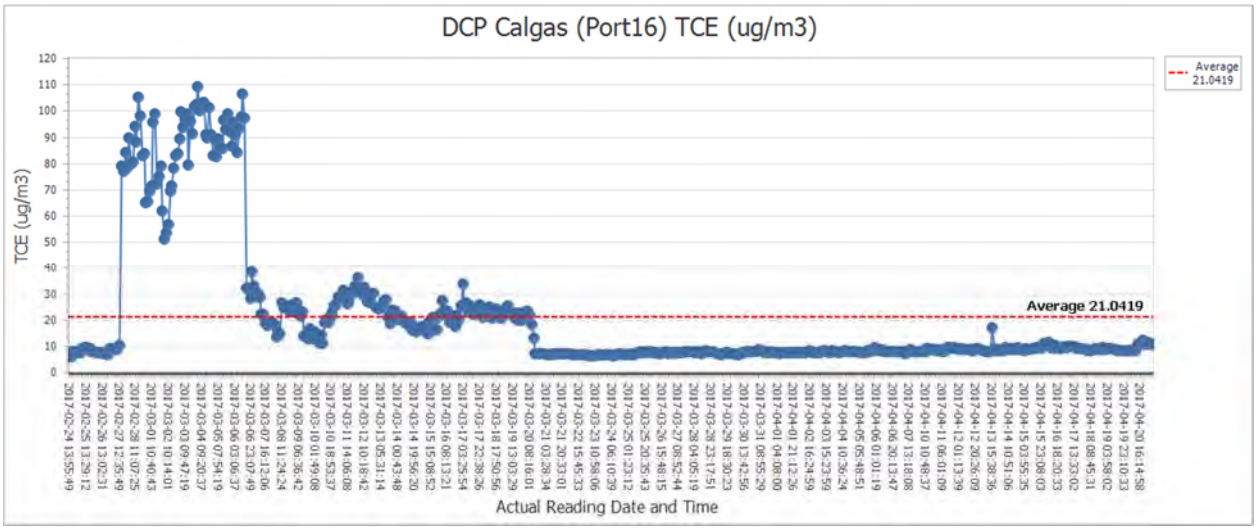

DCP SD1 (Port11) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 14.4196
Average 14.4196

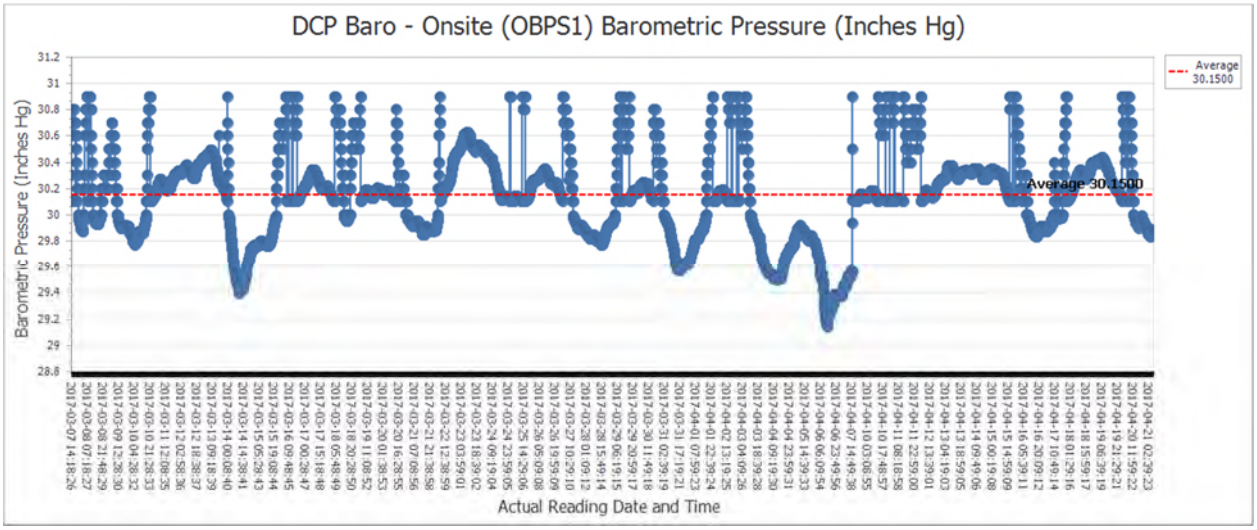

DCP HRS5 (Port12) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 178.8968
Average 178.8968


DCP HRS7 (Port13) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 13.4939
Average
13.4939

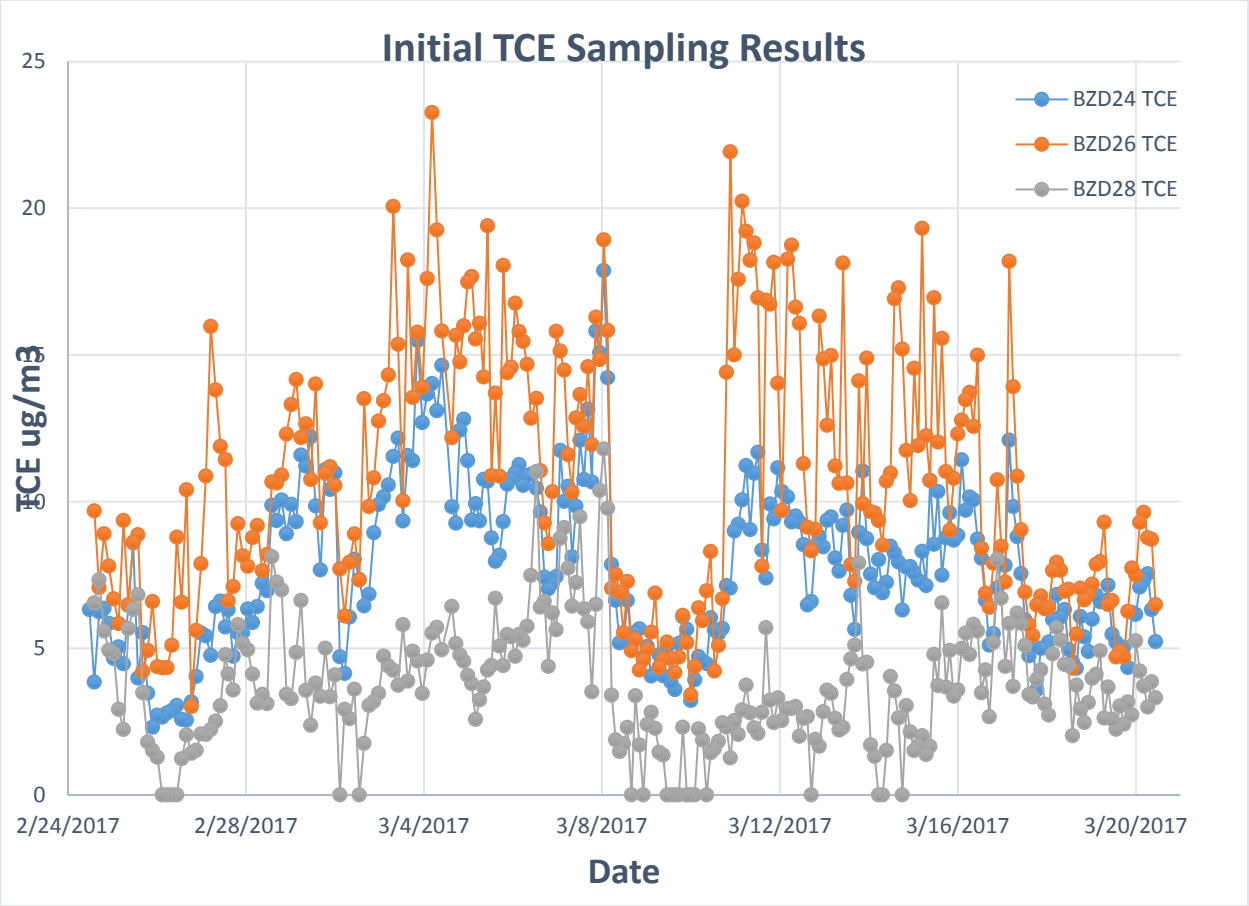

DCP SP1 (Port14) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 95.9368
Average
95.9368

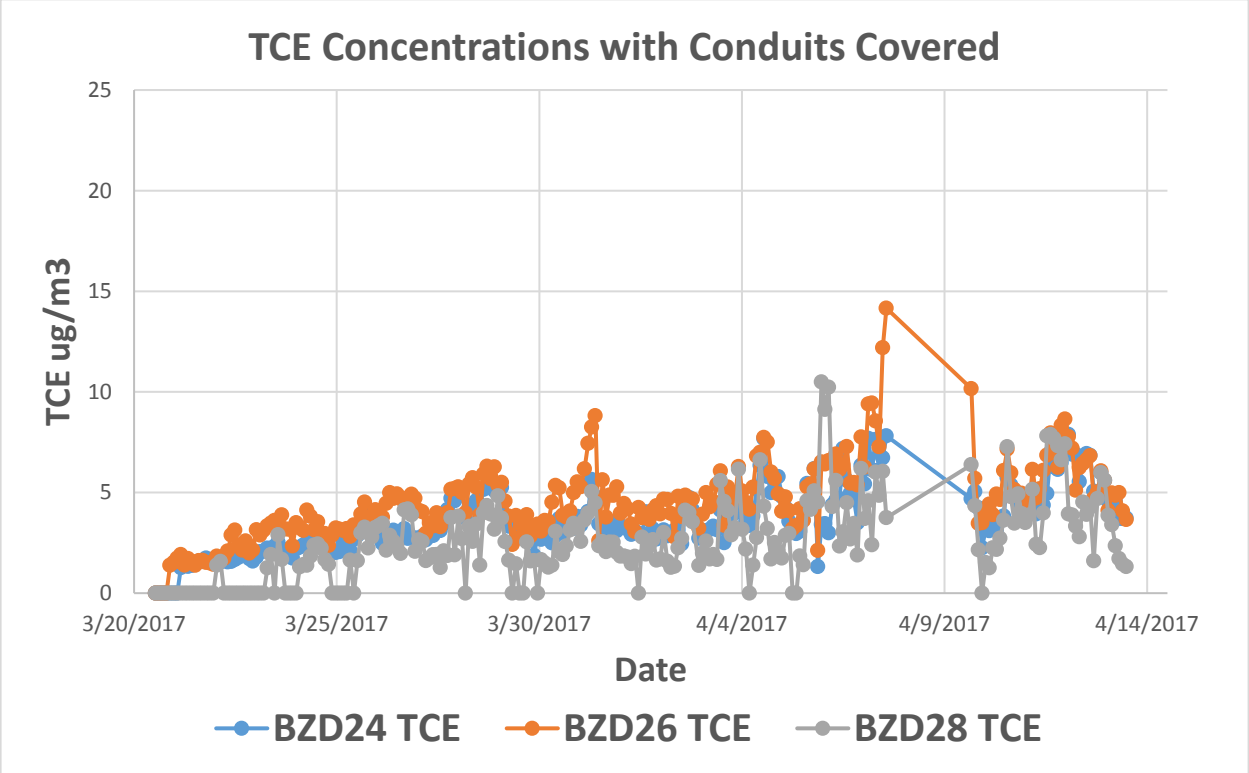

DCP HIW (Port15) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average 2.1758
Average
2.1758

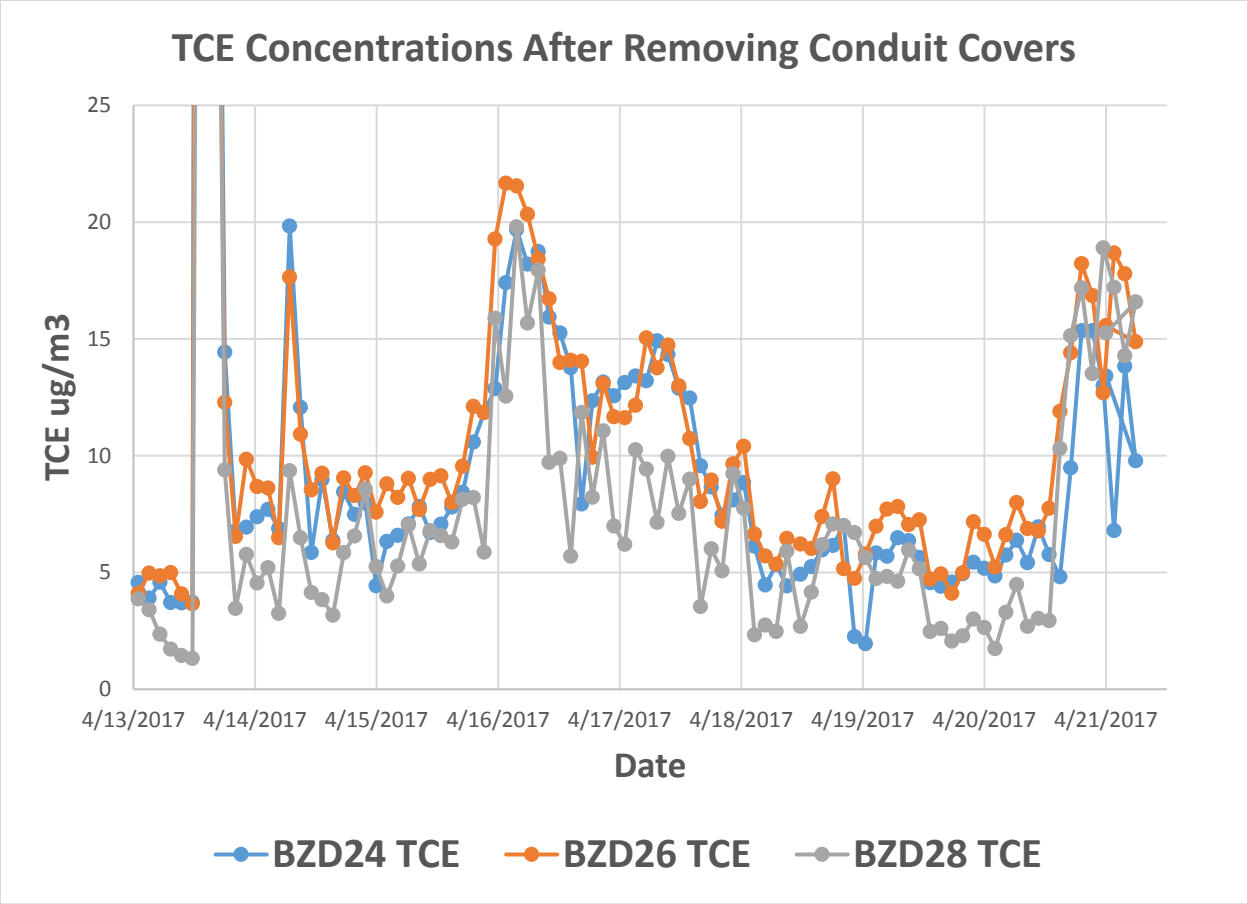

DCP Calgas (Port16) TCE (ug/m3)
TCE (ug/m3)
Actual Reading Date and Time
Average
21.0419
Average 21.0419


DCP Baro - Onsite (OBPS1) Barometric Pressure (Inches Hg)
Barometric Pressure (Inches Hg)
Actual Reading Date and Time
Average
30.1500
Average 30.1500

APPENDIX F—BREATHING-ZONE TREND GRAPHS


Initial TCE Sampling Results
25
20
15
10
5
0
TCE ug/m3
BZD24 TCE
BZD26 TCE
BZD28 TCE
2/24/2017
2/28/2017
3/4/2017
3/8/2017
3/12/2017
3/16/2017
3/20/2017
Date


TCE Concentrations with Conduits Covered
25
20
15
10
5
0
TCE ug/m3
3/20/2017
3/25/2017
3/30/2017
4/4/2017
4/9/2017
4/14/2017
Date
BZD24 TCE
BZD26 TCE
BZD28 TCE


TCE Concentrations After Removing Conduit Covers
TCE ug/m3
25
20
15
10
5
0
4/13/2017
4/14/2017
4/15/2017
4/16/2017
4/17/2017
4/18/2017
4/19/2017
4/20/2017
4/21/2017
Date
BZD24 TCE
BZD26 TCE
BZD28 TCE