FINAL

2019 ANNUAL OPERATIONS, MAINTENANCE, AND MONITORING REPORT

MAIN POST

FORMER FORT DEVENS ARMY INSTALLATION

MARCH 2021

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2019 ANNUAL REPORT

LONG-TERM MONITORING – MAIN POST

FORMER FORT DEVENS ARMY INSTALLATION

DEVENS, MASSACHUSETTS

MARCH 2021

CERTIFICATION:

I hereby certify that the enclosed Report, shown and marked in this submittal, is that proposed to be incorporated with Contract Number W912WJ-18-C-0011. This document was prepared in accordance with the U.S. Army Corps of Engineers (USACE) Scope of Work and is hereby submitted for Government Approval.

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LIST OF ACRONYMS AND ABBREVIATIONS

%	Percent
1,2-DCB	1,2-dichlorobenzene
1,3-DCB	1,3-dichlorobenzene
1,4-DCB	1,4-dichlorobenzene
AAFES	Army Air Force Exchange Service
AOC	Area of Concern
AST	Above-Ground Storage Tank
BRAC	Base Realignment and Closure
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMR	Code of Massachusetts Regulations
COC	Contaminant of Concern
COD	Chemical Oxygen Demand
CY	Calendar Year
DCB	Dichlorobenzene
DCL	Devens Consolidation Landfill
Devens	Main Post of the former Fort Devens Army Installation
DGM	Digital Geophysical Mapping
DO	Dissolved Oxygen
DoD	Department of Defense
DRFTA	Devens Reserve Forces Training Area
DRMO	Defense Reutilization and Marketing
DRO	Diesel Range Organic
DPW	Department of Public Works
EBS	Environmental Baseline Study
ECSM	Expanded Conceptual Site Model
ELAP	Environmental Laboratory Accreditation Program
EPH	Extractable Petroleum Hydrocarbon
ESD	Explanation of Significant Difference
ESMA	Excavated Soils Management Area
Eurofins/TA	Eurofins/TestAmerica Laboratories, Inc.
FFS	Focused Feasibility Study
FOST	Finding of Suitability to Transfer
FS	Feasibility Study
ft/ft	Feet per foot
HA	Housing Area
Harding	Harding Environmental Science & Engineering, Inc.

HGL	HydroGeoLogic, Inc.
HLA	Harding Lawson Associates, Inc.
H&S	H&S Environmental, Inc.
IC	Institutional Control
IDW	Investigation Derived Waste
J	Estimated
Katahdin	Katahdin Analytical Services
KGS	KOMAN Government Solutions, LLC
LCRS	Leachate Collection and Recovery System
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LEL	Lower Explosive Limit
LIFOC	Lease in Furtherance of Conveyance
LTM	Long-Term Monitoring
LTMMP	Long-Term Monitoring and Maintenance Plan
LUC	Land Use Control
LUCIP	Land Use Control Implementation Plan
MAROS	Monitoring and Remediation Optimization System
MassDEP	Massachusetts Department of Environmental Protection
MassDevelopment	Massachusetts Development and Finance Agency
MCL	Maximum Contaminant Level
MCP	Massachusetts Contingency Plan
MEC	Munitions and Explosives of Concern
mg/L	Milligrams per Liter
mm	Millimeter
MNA	Monitored Natural Attenuation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
mv	Millivolt
NA	Not Analyzed
ND	Non-Detect
NELAP	National Environmental Laboratory Accreditation Program
NOAA	National Oceanic and Atmospheric Administration
NS	No Standard
NTU	Nephelometric Turbidity Unit
O&M	Operations and Maintenance
ORP	Oxidation Reduction Potential
OER	Ordnance and Explosive Remediation, Inc.
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl

PARCCS	Precision, Accuracy, Representativeness, Completeness, Comparability, and Sensitivity
PASI/SSI	Preliminary Assessment/Site Inspection and Supplemental Site Investigation Comprehensive Report
PCE	Tetrachloroethene
POL	Petroleum, Oils, and Lubricants
ppm	Parts per million
Q	Qualifier
QAPP	Quality Assurance Project Plan
QC	Quality Control
QSM	Quality Systems Manual
RAO	Remedial Action Objective
ROD	Record of Decision
RPD	Relative Percent Difference
RI	Remedial Investigation
SA	Study Area
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethene
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbon
TSS	Total Suspended Solids
TTO	Total Toxic Organics
U	Non-Detect
UJ	Qualified Non-Detect
USEPA	United States Environmental Protection Agency
USACE-NAE	United States Army Corps of Engineers, New England District
UST	Underground Storage Tank
UXO	Unexploded Ordnance
µg/L	Micrograms per liter
µS/cm	Microsiemens per centimeter
VOC	Volatile Organic Compound
VPH	Volatile Petroleum Hydrocarbons
Weston	Weston Solutions, Inc.

EXECUTIVE SUMMARY

KOMAN Government Solutions, LLC (KGS) has prepared this 2019 Annual Report on behalf of the United States Army Corps of Engineers (USACE) North Atlantic Division, New England District (NAE) to document the ongoing Long-Term Monitoring (LTM) activities in several areas of concern (AOC) at the Main Post of the former Fort Devens Army Installation (Devens), located in Devens, Massachusetts. The LTM activities described within this report were performed to fulfill requirements of site-specific Records of Decision (ROD) and were performed in accordance with the 2015 *Long Term Monitoring and Maintenance Plan* (LTMMP; Sovereign/ HydroGeoLogic, Inc. [HGL], 2015).

The scope of this document details the 2019 LTM activities conducted at AOC 57, AOC 69W, AOC 43G, AOCs 32 and 43A, the Devens Consolidation Landfill (DCL), and the Grant Housing Area (HA) and 37-mm Impact Area (Figure 1-1).

The Army conducted the spring LTM event in April 2019 at AOC 57, AOCs 32 and 43A, and the DCL. Ten monitoring wells and one surface water location were sampled during the spring LTM event. The Army conducted the fall LTM event in October 2019 at AOC 43G, AOC 69W, DCL and also collected the annual DCL leachate sample. Sixteen groundwater monitoring wells, two well points, and one leachate discharge point were sampled during the fall event. Samples that contained contaminants of concern (COCs) at concentrations exceeding the criteria set forth in the respective RODs are summarized below.

- AOC 57 (Area 3) – During the spring 2019 LTM event, groundwater samples were collected from two monitoring wells and one surface water location. Total arsenic at both shallow wells exceeded the 10 microgram per liter (µg/L) cleanup goal established in the 2001 ROD. The dissolved iron results from the surface water sample were less than the 1,000 µg/L benchmark based on United States Environmental Protection Agency (USEPA) water quality criteria (Table ES-1).
- AOC 69W – Groundwater was sampled from eight monitoring wells and two well points during the fall LTM event. Arsenic exceeded the 10 µg/L cleanup goal in four wells; iron (one well) and manganese (six wells and one well point) exceeded the site-specific monitoring criterion (Table ES-2).
- AOC 43G – Groundwater was sampled from eight monitoring wells during the fall LTM event. Concentrations of benzene, ethylbenzene, and xylenes did not exceed the cleanup goals. Manganese (six wells) and iron (two wells) exceeded the site-specific cleanup goals and volatile petroleum hydrocarbons (VPH) (two wells) exceeded the monitoring criteria (Table ES-3).
- AOCs 32 and 43A – Groundwater was sampled from four monitoring wells during the spring LTM event. Arsenic (one well, 32M-01-14XOB) and 1,4-dichlorobenzene (one well, 32M-01-18XBR) exceeded site-specific cleanup goals. VPH and chlorobenzene exceeded site-specific monitoring criteria at one well, 32M-01-18XBR (Table ES-4).
- DCL – Four monitoring wells were sampled during the spring and fall LTM events. There were no exceedances of the site-specific cleanup goals and monitoring criteria. The October 2019 leachate sample results did not exceed the discharge permit limits.

The following sections summarize the key conclusions associated with the 2019 LTM program. Recommendations for changes to the LTM program are not provided in this report; instead, recommendations will be presented in a revised Long-term Monitoring and Maintenance Plan

(LTMMP) to be prepared on an as-needed basis. Remedial duration assessments are also not provided in this LTM report. Remedial duration assessments were presented in the *2015 Five-Year Review Report* (H&S Environmental, Inc. [H&S], 2015) for sites with (AOC 43G and AOCs 32/43A) and without (AOC 69W and AOC 57) ROD-established remedial timeframes. These assessments indicated that the remedial durations established in the respective RODs will be met with continued long-term monitoring and Institutional Controls (ICs). The Army will evaluate remedial durations again as part of the 2020 Five-Year Review.

AOC 57 Conclusions

- Total arsenic was detected at concentrations above the cleanup goal at monitoring wells 57M-95-03X and 57M-96-11X during the spring 2019 LTM event. The 2019 groundwater sampling results for arsenic reflect a decrease relative to the 2018 data. Graphical and statistical analysis of the data trends over time indicate that although the total arsenic concentrations at wells 57M-95-03X and 57M-96-11X have decreased over the past year, over the longer period of record no statistically significant trends were identified at the specified level of significance.
- Dissolved iron was detected at a concentration less than the USEPA Water Quality Criterion at surface water sampling location 57-AREA3-SW1 during the spring 2019 LTM event.
- Land Use Controls (LUCs) remain effective at AOC 57.

AOC 69W Conclusions

- Dissolved arsenic remains above the cleanup goal at monitoring wells 69W-94-13, ZWM-95-15X, ZWM-99-22X, and ZWM-99-23X. The arsenic concentrations continue to fluctuate over the period of record with no statistically significant trends. Manganese was detected at 69W-94-13, 69W-94-14, ZMW-95-15X, ZWM-99-22X, ZWM-99-23X, ZMW-01-25X, and 69WP-08-01 above the 291 µg/L monitoring criterion. Manganese concentrations continued to fluctuate from 2000 to 2019. A statistically significant upward trend was identified for manganese at well ZWM-01-25X, with downward trends identified at ZWM-99-22X and ZWM-99-23X.
- Extractable petroleum hydrocarbon (EPH)/Massachusetts Department of Environmental Protection (MassDEP) concentrations were non-detect at the laboratory detection limits or less than the monitoring criteria in 2019 with the exception of the detection of EPH C_{11}-C_{22} aromatics at one well (ZMW-99-22X, 220 µg/L) that exceeded the 200 µg/L monitoring criterion; a statistically significant downward trend for this COC was identified.
- LUCs remain effective at AOC 69W.

AOC 43G Conclusions

- Concentrations of benzene, ethylbenzene, and xylenes at AOC 43G were below the cleanup goals established in the ROD. Total manganese concentrations exceeded the cleanup goal at AAFES-2 (downward trend), XGM-93-02X (downward trend), and XGM-94-04X (no trend). Total manganese also exceeded the cleanup goal at XGM-94-06X, XGM-94-07X, and XGM-94-08X; however, there are insufficient data points in their respective data records to perform trend analysis. The manganese exceedances are likely attributable to a reducing groundwater environment, identified at six of eight wells, that is low in dissolved oxygen (DO) and high in turbidity, thereby generating more

soluble and mobile forms of manganese, as well as iron and arsenic, from the aquifer formation. Total iron concentrations exceeded the cleanup goal at wells AAFES-2 (with a downward trend) and XGM-93-02X (with a downward trend). Total arsenic concentrations exceeded the MCL at two wells (AAFES-2 and XGM-93-02X).

- VPH C_5-C_8 aliphatics and C_9-C_{10} aromatics were detected above the monitoring criteria at three wells: AAFES-2, XGM-94-04X, and XGM-97-12X. These wells are located downgradient of the former UST tanks. VPH concentrations are evaluated against Massachusetts Contingency Plan (MCP) standards for comparison purposes, but the standards are not considered cleanup goals under the ROD. For VPH C_5-C_8 aliphatics, statistically significant downward data trends were noted for well XGM-97-12X. Although 2018 results were non-detect for well XGM-94-04X, an increase was noted in 2019 and a longer-term statistically significantly upward trend was noted for the well for the complete LTM dataset. For VPH C_9-C_{10} aromatics, concentrations were above the monitoring criteria at three wells, with a decrease at XGM-97-12X from 2018 to 2019 and increases at AAFES-2 and XGM-94-04X from 2018 to 2019. However, overall, two of the wells (AAFES-2 and XGM-97-12X) have statistically significant decreasing trends and one well (XGM-94-04X) does not have a statistically significant trend. In 2019, the VPH C_9-C_{12} concentrations in the sampled AOC 43G wells were below the 700 µg/L monitoring criterion, with the exception of AAFES-2 (790 µg/L). No statistically significant trend was identified for VPH C_9-C_{12} at AAFES-2.
- The Army will continue to evaluate the trend of C5-C8 aliphatic concentrations at current LTM wells for future sampling events. VPH will be sampled for the wells identified by the current LTM program.
- LUCs remain effective at AOC 43G.

AOCs 32 and 43A Conclusions

- COCs at AOC 32 and 43A consist of arsenic, manganese, VPH, and volatile organic compounds (VOCs); in particular, the dichlorobenzene (DCB) isomers. Total arsenic exceeded the cleanup goal at one of four wells (downgradient monitoring well 32M-01-14XOB). Manganese was not detected in 2019 at concentrations greater than the cleanup goal. In 2018, all three DCB isomers exceeded cleanup goals at source area well 32M-01-18XBR, however for 2019, only 1,4-DCB exceeded the cleanup goal. VPH concentrations were evaluated against MCP standards for comparison purposes, but the standards are not considered cleanup goals under the ROD. VPH C_9-C_{10} aromatics exceeded the monitoring criterion only in the duplicate sample collected at source area well 32M-01-18XBR; the primary sample did not exceed the criterion. 1,3-DCB, 1,4-DCB, and VPH C_9-C_{10} concentrations at 32M-01-18XBR were identified to have overall statistically significant downward trends. Chlorobenzene was detected (180 µg/L) above the monitoring criteria (100 µg/L) at 32M-01-18XBR.
- LUCs remain effective at AOCs 32 and 43A.

DCL Conclusions

- The groundwater sampling results from the DCL monitoring wells consist of non-detections or low-level detections below the monitoring benchmarks, consistent with previous results in the long-term dataset.
- The DCL leachate sample results were within the discharge permit limits.

- LUCs remain effective at DCL.
- The LUC inspections of the DCL contributor sites (AOC 9, AOC 40, and Study Area 13) revealed no changes in land use at the individual contributor sites. Per the requirements of the 2006 transfer deed, these contributor sites are not being used or are intended to be used for residential purposes.
- Maintenance activities at the DCL during 2019 included landfill mowing, leachate pump flow meter calibration, clearing of vegetation from the riprap along the toe of the landfill, flush-cutting of larger vegetation on the landfill cap, repair of landfill gas vent labels and screens, monthly inspections of the leachate pump system, removal of a metal shed, replacement of a security gate, and backfilling of animal burrows.
- Soil gas sampling results in 2019 for the three soil gas probes installed in 2018 in the area between the DCL and a new building to the east were acceptable (no anticipated risks associated with the soil gas concentrations).

Grant, Oak, Maple Housing Areas, and 37-mm Impact Area Conclusions

- Results of the annual compliance monitoring indicate that no deviations or deficiencies to the LUCs were evident and corrective action(s) were not necessary.
- No significant anomalies were detected during the annual UXO screening.
- In March 2017, the Army submitted a Land Use Control Implemental Plan (LUCIP) for the Oak and Maple Housing Areas for regulatory agency approval. On 2 October 2018, EPA requested that the LUCIP be put on hold pending completion of a Massachusetts Notice of Activity and Use Limitation (NAUL) between MassDEP and MassDevelopment. Regulatory agency concurrence of the NAUL is pending.

Table ES-1
AOC 57 Area 3 Contaminant of Concern Cleanup Goal Exceedances, April 2019
Main Post, Former Fort Devens Army Installation, Massachusetts

Well Identification	Analyte	Cleanup Goal (µg/L) [1]	Benchmark (µg/L)	Detected Result (µg/L)
Groundwater				
57M-95-03X [2]	Arsenic (total)	10	--	15
57M-96-11X [3]	Arsenic (total)	10	--	100

Notes:

[1] The Cleanup Goal for arsenic in groundwater is the Maximum Contaminant Level (MCL) standard.

[2] Sentry Well

[3] Source Area Well

.

Table ES-2
AOC 69W Contaminant of Concern Monitoring Criteria Exceedances, October 2019
Main Post, Former Fort Devens Army Installation, Massachusetts

Well Identification	Analyte	Cleanup Goal (µg/L) [1]	Benchmark (µg/L) [4]	Detected Result (µg/L)
69W-94-13[2]	Arsenic (dissolved)	10	--	70
	Manganese (dissolved)	--	291	1,600
ZWM-94-14	Manganese (dissolved)	--	291	1,200
ZWM-95-15X[3]	Arsenic (dissolved)	10	--	17
	Manganese (dissolved)	--	291	690
ZWM-99-22X[2]	Arsenic (dissolved)	10	--	150
	Iron (dissolved)	--	9,100	10,000
	Manganese (dissolved)	--	291	1,100
	EPH C_{11}-C_{22} Aromatics	--	200	220
ZWM-99-23X[3]	Arsenic (dissolved)	10	--	24
	Manganese (dissolved)	--	291	770
ZWM-01-25X	Manganese (dissolved)	--	291	6,200
69WP-08-01	Manganese (dissolved)	--	291	1,300

Notes:

1 Cleanup Goal for arsenic in groundwater is the MCL standard.

[2] Source Area Well

[3] Sentry Well

[4] EPH concentrations are evaluated against Massachusetts Contingency Plan (MCP) standards for comparison purposes, but the standards are not considered cleanup goals under the ROD. The monitoring criteria for iron and manganese are background levels.

Table ES-3
AOC 43G Contaminant of Concern Cleanup Goal Exceedances, October 2019
Main Post, Former Fort Devens Army Installation, Massachusetts

Well Identification	Analyte	Cleanup Goal (µg/L) [1]	Benchmark (µg/L)[3]	Detected Result (µg/L)
AAFES-2[2]	Iron (total)	9,100	9,100	20,000
	Manganese (total)	375	291	3,500
	VPH C_5-C_8 Aliphatics	--	300	1,200
	VPH C_9-C_{10} Aromatics	--	200	1,400
	VPH C_9-C_{12} Aliphatics	--	700	790
XGM-93-02X[2]	Iron (total)	9,100	9,100	9,300
	Manganese (total)	375	291	1,300
XGM-94-04X	Manganese (total)	375	291	5,500
	VPH C_5-C_8 Aliphatics	--	300	590
	VPH C_9-C_{10} Aromatics	--	200	830
XGM-94-06X	Manganese (total)	375	291	1,400
XGM-94-07X	Manganese (total)	375	291	4,200
XGM-94-08X	Manganese (total)	375	291	3,500
XGM-97-12X[2]	VPH C_5-C_8 Aliphatics	--	300	350
	VPH C_9-C_{10} Aromatics	--	200	340

Notes:
[1] Cleanup goal for iron is the background level. The cleanup goal for manganese is a site-specific goal based on an AOC 43G risk evaluation (HGL, 2008).

[2] Source Area Well

[3] VPH concentrations are evaluated against MCP standards for comparison purposes, but the standards are not considered cleanup goals under the ROD.

Table ES-4
AOCs 32 and 43A Contaminant of Concern Cleanup Goal Exceedances, April 2019
Main Post, Former Fort Devens Army Installation, Massachusetts

Well Identification	Analyte	Cleanup Goal (µg/L) [1]	Benchmark (µg/L)[4]	Detected Result (µg/L)
32M-01-14XOB[2]	Arsenic (total)	10	--	29
32M-01-18XBR[3]	1,4-dichlorobenzene	5.0	--	29
	Chlorobenzene	--	100	180 J
	VPH[4] C_9-C_{10} aromatics	--	200	230*

Notes:

[*] Duplicate Sample only.

[1] Cleanup Goals for arsenic and 1,4-DCB are the MCL standards.

[2] Downgradient Well

[3] Source Area Well

[4] VPH concentrations are evaluated against MassDEP GW-1 standards for comparison purposes but are not considered cleanup goals under the ROD.

1.0 INTRODUCTION

KOMAN Government Solutions, LLC (KGS) prepared this 2019 Annual Long-Term Monitoring (LTM) Report to detail the performance of ongoing LTM activities required at the former Fort Devens Army Installation (Devens) site, located in Devens, Massachusetts (Figure 1-1). LTM activities were performed in accordance with the *Long-Term Monitoring and Maintenance Plan* (LTMMP; Sovereign/HydroGeoLogic, Inc. [HGL], 2015).

1.1 LONG-TERM MONITORING PROGRAM BACKGROUND

The overall LTM program instituted at Devens is a result of the individual Records of Decision (RODs) issued for each area of concern (AOC) referenced in this report. These AOCs consist of:

- AOC 57 – Building 3713 Fuel Oil Spill [Harding Environmental Science & Engineering (Harding), 2001]
- AOC 69W – Fort Devens Elementary School (Building 215) Fuel Oil Spill Site (Harding Lawson Associates [HLA], 1999a)
- AOC 43G – Historical Gas Station G (United States Environmental Protection Agency [USEPA], 1996)
- AOCs 32 and 43A – Defense Reutilization and Marketing Office (DRMO) Yard and former Petroleum, Oils, and Lubricants (POL) Storage Area (Horne Environmental Services, Inc. 2001);
- The Devens Consolidation Landfill (DCL) (HLA, 1999b)
- Grant Housing Area (HA) and 37-millimeter (mm) Impact Area (Weston Solutions, Inc. [Weston], 2009)

The RODs established site-specific Remedial Actions for each AOC, as well as the LTM program, Land Use Controls (LUCs), and, in some cases, removal actions. The Army and USEPA evaluate the effectiveness of the Remedial Actions as part of the Five-Year Review reports (HLA, 2000a; Nobis Engineering, 2005; HGL, 2010; and H&S Environmental, Inc. [H&S], 2015).

Since the inception of the LTM program, the monitoring requirements at some of the AOCs have been modified or removed. Sampling at AOC 57, AOC 69W, AOC 43G, AOCs 32/43A, and the DCL in 2019 was conducted per the LTMMP (Sovereign/HGL, 2015) as follows:

- AOC 57 LTMMP activities includes hydraulic monitoring at 19 locations and groundwater sampling for metals at two monitoring wells and one surface water location every five years (although the Army has been collecting additional, annual samples from AOC 57 since the LTMMP was issued). The LTMMP includes decommissioning of sumps at Area 2.
- AOC 69W LTMMP activities include annual hydraulic monitoring at 17 locations and groundwater sampling at eight wells and two well points. Samples from eight wells are analyzed for extractable petroleum hydrocarbon (EPH). Samples from ten monitoring points are analyzed for metals as well as water quality/field parameters.
- AOC 43G LTMMP activities include annual hydraulic monitoring at ten wells and groundwater sampling at eight wells. Samples from four of the wells are analyzed for volatile petroleum hydrocarbons (VPH), alkalinity, and metals. The samples from eight wells are analyzed for metals.

- AOCs 32 and 43A LTMMP activities include annual hydraulic monitoring at 26 locations and groundwater sampling at four wells for volatile organic compounds (VOC), VPH, and metals.
- The DCL LTM and operation and maintenance (O&M) activities consist of annual landfill gas vent monitoring, monthly O&M of the leachate pump station, annual sampling of the leachate, annual landfill cap inspection, semi-annual hydraulic monitoring at seven locations, and semi-annual groundwater sampling at four locations for VPH, EPH, pesticides, metals, total dissolved solids, anions, nitrate/nitrite, alkalinity, cyanide, and chemical oxygen demand (COD). Samples are analyzed for polychlorinated biphenyls (PCBs) every five years. The DCL leachate sampling consists of one sample collected and analyzed for VOCs, semi-volatile organic compounds (SVOCs), organochlorine pesticides/PCB, total petroleum hydrocarbons (TPH), total metals (select metals), wet chemistry parameters (total suspended solids [TSS], pH, total phenolics, and total cyanide).
- Per the Final LTMPP, sampling using HydraSleeve™ technology was utilized at AOC 57 and AOCs 32/43A along with low-low flow sampling methods in 2016 to determine if it was a viable alternative to low-flow sampling. However, as discussed in the 2016 annual report, because of the large discrepancies between results and the limited volume of sample obtained from the HydraSleeve™ sampler; it appeared that the use of HydraSleeve™ technology was not a viable alternative to established low-flow sampling procedures. The Army continues to sample using the low-flow sampling procedures.

1.2 SITE DESCRIPTION AND HISTORY

The former Fort Devens is located in the towns of Ayer and Shirley in Middlesex County, and Harvard and Lancaster in Worcester County, Massachusetts, approximately 35 miles northwest of Boston, Massachusetts. The installation occupied approximately 9,260 acres and was comprised of the North Post, the Main Post, and the South Post (Figure 1-1). Route 2 divides the South Post from the Main Post. The Nashua River runs through the North, Main, and South Posts. The area surrounding Devens is largely residential property.

Camp Devens was established in 1917 as a temporary training area for soldiers during World War I. Devens was used for a variety of training missions between 1917 and 1990. Prior to 1917, the area was occupied by residential homes and farmland. In 1932, the site was named Fort Devens and made a permanent installation with the primary mission of commanding, training, and providing logistical support for non-divisional troop units. The installation also supported the Army Readiness Regional and National Guard units in the New England area. Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, Devens was placed on the National Priorities List on November 21, 1989, because of identified environmental contamination at several sites.

Devens was identified for cessation of operations and closure under Public Law 101-510, the Defense Base Realignment and Closure (BRAC) Act of 1990, and officially closed in March 1996. As part of the Devens BRAC program, portions of the property formerly occupied by Fort Devens were retained by the Army for reserve forces training and renamed the Devens Reserve Forces Training Area (DRFTA). Areas not retained as part of DRFTA have been either transferred or are in the process of being transferred to Massachusetts Development and Finance

Agency (MassDevelopment) for reuse and redevelopment and to other federal agencies as noted below.

A total of 5,181.64 acres (344.94 acres of the Main Post enclave and 4,836.70 acres of the South Post) were retained for DRFTA. From 1996 through present, the Army has transferred 2,712 acres to MassDevelopment. A total of 1,079.62 acres was transferred to other federal agencies, including 836 acres to the Department of the Interior, US Fish and Wildlife Agency, 221.62 acres to the Department of Justice Bureau of Prisons and 22 acres to the Department of Labor Job Corps Center.

1.3 GROUNDWATER HYDROLOGY

Devens is located in eastern Massachusetts, approximately 35 miles northwest of Boston, Massachusetts. The proximity of the Atlantic Ocean, Long Island Sound, and the Berkshire Hills plays an important role in determining the weather and climate of the Devens area.

The depth to groundwater was recorded within a 24-hour period at monitoring wells within each AOC as part of the 2019 LTM Program. Plotting the synoptic groundwater elevation data allows a determination of groundwater flow directions, which is essential in understanding contaminant migration pathways and evaluating the effectiveness of the monitoring well network. Groundwater elevations at monitoring wells were determined by subtracting the depth to water from the elevation of a reference point on the top of the well riser. The surface water elevation at staff gauges was determined by adding the observed water level to the elevation of a reference point on the staff gauge. Water level elevations for the spring and fall 2019 events are shown in Table 1-1 and Table 1-2, respectively. Groundwater gradients present at each AOC, as determined from the available groundwater elevation data, are expressed as feet per foot (ft/ft) of change in water table elevation and are presented in the section specific to each AOC.

Annual precipitation data for 2004 through 2019, as reported from the Fitchburg, Massachusetts, weather station, are presented in Table 1-3. The precipitation data indicate precipitation across the Devens area during January through July as generally consistent with averages for the period of record. For August through December, recorded levels were substantially less than average (National Oceanic and Atmospheric Administration [NOAA, 2019]). As shown in Table 1-3, the overall precipitation in 2019 (38.78 inches) was lower than in most years (average of 43.73 inches since 2004).

1.4 GROUNDWATER SAMPLING

The LTM program was conducted in accordance with the LTMMP (Sovereign/HGL, 2015) to monitor contaminant of concern (COC) trends over time for the respective AOCs. During 2019, the LTM program included:

- Annual groundwater and surface water LTM event in April 2019 at AOC 57;
- Annual groundwater LTM event in October 2019 at AOC 69W;
- Annual groundwater LTM event in October 2019 at AOC 43G;
- Annual groundwater LTM event in April 2019 at AOCs 32/43A;
- Semi-annual groundwater LTM events at the DCL in April and October 2019; and
- Annual DCL leachate LTM event in October 2019.

1.4.1 Preparation for Sampling

Sampling activities were coordinated with the United States Army Corps of Engineers (USACE) – North Atlantic Division, New England District (NAE), BRAC Environmental Coordinator

office, and the contracted analytical laboratory. The laboratory provided the sampling supplies (sample containers, packing material, custody seals, and coolers) to the sampling team per the specific sample requirements identified in Table 1-4.

During the groundwater sampling activities, the sampling team used YSI water quality meters, LaMotte turbidity meters, MP10 pump controllers, QED Sample Pro bladder pumps, Geopump peristaltic pumps, and Solinst water levels indicators (or similar) that were rented from Pine Environmental, Inc. of Woburn, Massachusetts. Dedicated submersible bladder pumps were used in select wells. Sampling equipment was tested to ensure that it was functional prior to sampling. The well construction details for each groundwater monitoring well were reviewed prior to the sampling events for determination of non-dedicated well pump placement. The well construction diagrams were maintained on site during the sample events to confirm well screen interval information as needed.

Well construction details and other pertinent information are presented in Table 1-5. AOC-specific actions levels are summarized in Table 1-6. DCL leachate discharge limits are summarized in Table 1-7.

1.4.2 Sampling

Groundwater monitoring wells were purged and sampled in accordance with the USEPA Region 1 guidance document, "Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells" (USEPA Region 1, 2017b). Low-flow bladder or peristaltic pumps were used, as described in the LTMMP (Sovereign/HGL, 2015). Samples submitted for dissolved metals analyses were field filtered through 0.45-micron filters directly into preserved sample bottles.

Sample preparation and analysis methods, containers, holding times, and preservatives for each AOC site parameter are summarized in Table 1-4. Location and construction details for each groundwater monitoring well, well point, sump, and surface water location are summarized in Table 1-5.

The groundwater elevation data for the spring and fall 2019 sampling events are summarized in Table 1-1 and Table 1-2, respectively. The field sampling logs are presented in Appendix A.

1.4.3 Equipment Decontamination

Non-dedicated sampling and monitoring equipment was decontaminated between sampling locations in accordance with the Annual LTMMP Quality Assurance Project Plan (QAPP) (KGS, 2016a) to prevent cross-contamination among samples.

1.4.4 Investigation Derived Waste

Investigation-derived waste (IDW) was not generated during the 2019 LTM activities. Purge water collected during the 2019 LTM did not have total headspace VOC readings conducted based on purge water results from prior LTM events since 2015. Purge water from wells was returned to the ground in proximity to the sample collection area following low-flow sampling.

1.4.5 Monitoring Well Network Inspection and Repairs

The condition of the monitoring well network at each LTM site was inspected during the 2019 sampling events. Observations, if noted, are contained within the field sampling logs provided in Appendix A. Monitoring wells were found to be in good overall condition.

1.5 LABORATORY TESTING

Eurofins/TestAmerica Laboratories, Inc. (Eurofins/TA), using facilities in Savannah, Georgia and Arvada, Colorado, was the primary contract laboratory for the analysis of water samples for the spring and fall 2019 LTM events. Eurofins/TA is compliant with the Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, version 5.3 (DoD, 2019) under the DoD Environmental Laboratory Accreditation Program (ELAP) and holds current accreditation in accordance with the National Environmental Laboratory Accreditation Program (NELAP) for all applicable analytical methods. Eurofins/TA subcontracted to Katahdin Analytical Services of Westbrook, Maine (Katahdin) to perform the required VPH and EPH analyses, using the Massachusetts Department of Environmental Protection (MassDEP) analytical methods. Katahdin holds MassDEP certification and DoD ELAP accreditation for these analyses.

1.5.1 Analyses

Samples were analyzed for the following AOC-specific sets of COCs:

- AOC 57 – total metals in groundwater (for arsenic, iron, and manganese) and dissolved metals in surface water;
- AOC 69W – EPH and dissolved metals (arsenic, iron, and manganese) in groundwater;
- AOC 43G – VPH (including benzene, toluene, ethylbenzene, and xylenes [BTEX]), total alkalinity, and total metals (arsenic, iron, and manganese) in groundwater;
- AOC 32/43A – VOCs, VPH, and total metals (arsenic and manganese) in groundwater;
- DCL Groundwater – VPH including BTEX, EPH including polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides, select total metals (including mercury), and the following general chemistry parameters: total dissolved solids (TDS), chloride, sulfate, nitrate/nitrite-as-N, total alkalinity, total cyanide, and chemical oxygen demand (COD); and,
- DCL Leachate – VOCs/Total Toxic Organics (TTO), SVOCs, organochlorine pesticides/PCBs, TPH, select total metals, and wet chemistry (TSS, pH, total phenolics, and total cyanide).

Metals analyses were performed for total or dissolved metals on an AOC-specific basis as described above. The laboratory methods used to analyze groundwater samples from each AOC and the DCL leachate are listed in Table 1-4.

1.5.2 Analytical Results

The analytical results for each AOC were compared to the respective monitoring criteria or cleanup goals established in the ROD. Arsenic results in groundwater were compared to the 10 micrograms per liter (µg/L) maximum contaminant level (MCL) that was promulgated in 2006, which is lower than the cleanup standard that was previously established in the site-specific RODs. Site-specific COCs and the associated cleanup goals or comparison criteria for the AOCs, as identified in each site-specific ROD, are presented in Table 1-6**.** The DCL leachate discharge limits are presented in Table 1-7. Laboratory analytical results for water samples collected during the 2019 LTM events are discussed in Sections 2.0 through 6.0. Laboratory analytical reports are present in Appendix B. The effects of contamination in laboratory and

field blanks, as well as the effects of other quality control (QC) issues associated with the analytical results, are discussed in the data validation reports presented in Appendix C.

1.6 QUALITY CONTROL

Analytical data were provided by a properly accredited laboratory (Eurofins/TA) and the data analyses, collection, and validation were performed per the approved LTMMP Quality Assurance Project Plan (KGS, 2016a). The data from the Main Post 2019 LTM sampling events are acceptable for use with minimal QC deviations.

1.6.1 Field Quality Control

Field duplicate samples were collected during sampling events at each AOC, at the rate of 10 percent (i.e., 1 per 10 samples), to evaluate field precision. Matrix spike (MS)/matrix spike duplicate (MSD) pairs (one set per AOC) were also submitted to evaluate matrix effects on field and analytical precision and accuracy.

The field instruments used to measure water quality parameters (temperature, dissolved oxygen [DO], pH, oxidation-reduction potential (ORP), specific conductance, and turbidity) were calibrated twice daily (prior to, and following field use) in accordance with the manufacturer's instructions and in accordance with USEPA's Calibration of Field Instruments Standard Operating Procedure (USEPA Region 1, 2017). Calibration log forms are presented in Appendix A. No instrument error was noted during the spring or fall LTM events.

1.6.2 Data Evaluation for 2019 Long-Term Monitoring Events

The analytical results from the 2019 LTM events were evaluated for data acceptability in accordance with the USEPA Region 1 data validation guidelines (USEPA Region 1, 2013), the DoD QSM version 5.3 (DoD, 2019), and the laboratory's defined acceptance limits. The method requirements for the USEPA SW-846 QC guidance and the MassDEP VPH and EPH methods were also used as supplemental information. The data validation reports for the spring and fall 2019 LTM events are presented in Appendix C, and the general findings are summarized below.

1.6.3 Chemical Analytical Quality Assurance/Quality Control

Data qualification was typically the result of one or more of the following: holding time exceedances, continuing calibration verification (CCV) outliers for select VOC, blank contamination, including laboratory method blanks and trip blanks (for VOC analysis only); laboratory control sample (LCS) and/or laboratory control sample duplicate (LCSD) recovery and precision exceedances; low matrix spike (MS)/matrix spike duplicate (MSD) recovery exceedances; surrogate recovery exceedances; and field duplicate precision exceedances. Specific QC deviations requiring qualification in the 2019 data sets are provided in the data discussion section for each AOC.

Appropriate qualifiers have been added to the 2019 analytical data.

Analyses were performed in general compliance with the precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) requirements listed in the QAPP (KGS, 2016a). Good analytical practices and method requirements were followed, and the laboratories were determined to be performing properly. No significant QC deficiencies were noted. With required qualifications based on the issues noted above; analytical results reported for the 2019 LTM events samples were deemed usable.

2.0 AREA OF CONTAMINATION 57

2.1 SITE BACKGROUND

AOC 57 is located between Barnum Road and Cold Spring Brook on the northeast side of what was formerly the Main Post of Devens in the town of Harvard, Massachusetts (Figure 1-1). AOC 57 is located within a Zone II aquifer protection area for the Town of Ayer Grove Pond public water supply wells [1]. The portion of the former Devens site that includes AOC 57 was used primarily as a storage and maintenance area for military vehicles. AOC 57 consists of three sub-areas (Area 1, Area 2, and Area 3) that are located south to southeast of Building 3713 and former Buildings 3756, 3757, and 3758 (Figure 2-1). The sub-areas received storm water runoff and waste from vehicle maintenance at former vehicle storage yards related to former Building 3713 and former Buildings 3757 and 3758. A "No Further Action" ROD was completed for Area 1 (Harding, 2001) following the removal of PAH-contaminated soil in 1997.

Each sub-area includes an upland area that slopes downward to a delineated wetland area bordering Cold Spring Brook. Areas 2 and 3 are depicted on Figure 2-2 and Figure 2-3, respectively.

In September 1992, an investigation was performed to determine the presence or absence of environmental contamination at AOC 57 that may have occurred following a February 1977 fuel oil spill. An estimated 50- to 100-gallon spill of No. 4 fuel was discharged through the Area 1 outfall in 1977. Approximately 3,000 gallons of mixed oil and water were recovered through the use of a containment dike (Figure 2-2) and absorbent booms in 1977, and approximately 25 cy of petroleum contaminated soil were removed in 1997. The investigation revealed the presence of groundwater, soil, and sediment contaminated with oil, VOCs, SVOCs, pesticides, metals, and PCBs.

Based on the results of the investigation, the Army proposed that a limited soil removal action be conducted at Area 2. The removal action began at Area 2 in August 1994 and continued until September 1994, when it was discovered that contamination extended beyond the limits originally estimated. Approximately 1,300 cubic yards of soil were removed and the site was transferred to the remedial investigation (RI)/feasibility study (FS) process. During spring 1999, a soil removal action focusing on PCBs and EPH in soil was performed at Area 3 based on data obtained from the RI and a total of 1,860 cubic yards of soil was removed from Area 3.

In June 2000, the Army completed an RI at AOC 57 Areas 2 and 3 that revealed the presence of residual contamination at both sites. A ROD for Areas 2 and 3 was issued in September 2001. The ROD selected Alternative II-3, Excavation (For Possible Future Use) and LUCs for Area 2, and Alternative III-2a, Excavation (To Accelerate Groundwater Cleanup) and LUCs for Area 3. As part of excavation and product removal activities in Area 2, four sumps were installed to aid in observing the petroleum product sheen on the groundwater surface. Data obtained and observations made at Area 2 between 2002 and 2003 (during the soil excavation activities and subsequent investigations) prompted an Explanation of Significant Differences (ESD) in March 2004. The 2004 ESD expanded LTM activities to include EPH C_{11}-C_{12} as a COC for Area 2 soils to monitor the presence of petroleum waste encountered during contaminated soil removal, and to include EPH C_{11}-C_{12} and PCBs as COCs for Area 2 groundwater in the September 2001

[1] MassDEP establishes public water supply protection areas in accordance with the Drinking Water Regulations at 310 CMR 22.02. In part, a Zone II groundwater protection area is defined as the area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated.

AOC 57 ROD. Based on evaluation of LTM data through 2014, groundwater sampling at Area 2 was discontinued in 2015. Groundwater sampling at Area 3 continued as part of the regularly scheduled LTM program. No soil remediation activities necessitating soil sampling have been conducted at AOC 57 since 2003; therefore, no soil sampling has been conducted since issuance of the 2004 ESD.

Construction of a solar panel manufacturing facility between Areas 2 and 3 and Barnum Road (112 Barnum Road, Figure 2-1) began in 2008 and was completed in 2009. The solar panel manufacturing facility has since been closed but the building has been taken over by another company, Nypro, which conducts plastics manufacturing. The tenant has increased ownership of additional area within the building, although the same building footprint and infrastructure remain in place.

In March 2019, multiple debris areas were identified at AOC 57 between Areas 2 and 3, southeast of the walking path located behind 112 Barnum Road. The observable debris areas were a total of approximately 200 feet by 30 feet (Figure 2-1b). The debris areas are characterized mostly as rusted vehicle parts (metal debris, tires, and bumpers) and other smaller piles of rusted scrap metal (empty drums and containers). The majority of drums observed were partially buried. The former contents of many of the drums and containers is unknown; however, some of the drum labels are legible enough to identify the bulk contents, with some labeled as "antifreeze and gasoline." Large concrete slabs were also found. The Army will address the debris in accordance with the work plan that was provided for BCT review on December 16, 2020.

There is an irrigation well located on the adjacent property of 78 Barnum Road (Figure 2-1). The well is 505 feet deep and is believed to be an open borehole bedrock well. The property manager has indicated the well is used daily for lawn care for the property from spring to fall and there is no flow meter to record the flow rate or volume of water used. The property manager did not know how long the pump is operated each day. Pump test results for the irrigation well are provided in Appendix I.

The next LTM event is planned for spring 2020. A supplemental sampling event was also conducted during January-March 2020 in order to support the development of the 2020 Five-Year Review by addressing potential data gaps in the understanding of groundwater flow and the extent of arsenic contamination at AOC 57. The results of the spring 2019 sampling event are presented in this 2019 Annual Report. Results from the supplemental sampling are provided in Appendix G.

2.2 GROUNDWATER HYDROLOGY

During the April 2019 LTM event, water levels were collected from the following 19 wells and piezometers at AOC 57:

Area 2

57M-03-01X	57M-03-05X	57M-95-06X
57M-03-02X	57M-03-06X	57M-95-07X
57M-03-03X	57M-95-03X	57WP-06-02
57M-03-04X	57M-95-05X	

Area 3

57M-95-03X	57M-96-13X
57M-96-10X	57P-98-03X
57M-96-11X	57P-98-04X
57M-96-12X	57WP-06-03

Measured water levels at AOC 57 Areas 2 and 3 for the April 2019 LTM event are presented in Table 1-1. Water-table elevations for the April 2019 LTM event at AOC 57 Areas 2 and 3 are presented on Figure 2-4 (Area 2) and Figure 2-5 (Area 3). Data from the spring 2019 LTM event at AOC 57 indicates shallow groundwater flowing in a south/southeast direction, toward Cold Spring Brook, which is consistent with historical observations of groundwater flow patterns in this area.

Groundwater gradients, using the flow lines shown in Figure 2-4 and Figure 2-5, for the shallow groundwater within Area 2 (0.0116 ft/ft; Gradient Line A-A', Figure 2-4) and Area 3 (0.0254 ft/ft; Gradient Line A-A', Figure 2-5) were calculated using data generated by the April 2019 LTM event. Although the groundwater gradient typically varies across each site based on topography and seasonal variations in groundwater elevations, the selected flow paths are considered to be generally representative of site conditions and indicate that shallow groundwater flows to the south-southeast toward Cold Spring Brook.

2.3 GROUNDWATER SAMPLING

Beginning in 2008, groundwater at AOC 57 Area 3 has been sampled in the spring on an annual basis. As described in Section 1.1, the sampling program was modified in 2015 to suspend sampling at Area 2 but continued gauging Area 2 wells as part of the sampling event at Area 3. Wells sampled as part of the scheduled LTM program in April 2019 consisted of Area 3 wells 57M-95-03X and 57M-96-11X.

2.4 SURFACE WATER SAMPLING

During the spring 2019 LTM sample event, a surface water sample was collected from location 57-AREA3-SW1 within Area 3. A discrete grab sample was collected as close to the bottom of the water column as possible, without allowing bottom sediment to enter the sample container.

2.5 ANALYTICAL RESULTS

Groundwater analytical results (total arsenic, iron, and manganese analyses) for Area 3 from the spring 2019 LTM are summarized in Table 2-1. Surface water analytical results (dissolved arsenic, iron, and manganese analyses) from the spring 2019 LTM event are summarized in Table 2-2. Groundwater and surface water results for the spring event are presented on Figure 2-6.

2.5.1 April 2019 Data Summary

- Arsenic – Total arsenic concentrations exceeded the MCL of 10 µg/L at both wells: 57M-95-03X (15 µg/L) and 57M-96-11X (100 µg/L). These arsenic concentrations were notably less than those detected in spring 2018. Arsenic was not detected at surface water sampling location 57-AREA3-SW1 for the April 2019 sampling event.

- Iron – Groundwater at source area well 57M-96-03X had a total iron concentration of 5,600 µg/L, which was less than 9,100 µg/L background level. The total iron concentration at downgradient well 57M-95-11X (36,000 µg/L) was greater than the background level. The dissolved iron concentration in surface water sample 57M-AREA3-SW-1 (760 µg/L) was less than the monitoring benchmark of 1,000 µg/L.
- Manganese – The concentration of total manganese was less than the 291 µg/L background level at source area well 57M-95-03X (160 µg/L) and was greater than the background level at downgradient well 57M-96-11X (3,000 µg/L). Dissolved manganese was detected in the surface water sample 57-AREA3-SW1; however, no benchmark has been established for manganese in surface water.

2.5.2 AOC 57 Data Trends

The results of the 2019 LTM event at AOC 57 were compared to results from previous sampling events. Historical exceedances of the cleanup goals for AOC 57 Area 3 from 2003 through 2019 are summarized in Table 2-3.

Total arsenic concentrations in Area 3 groundwater remained above the MCL (10 µg/L) at wells 57M-96-11X (100 µg/L) and 57M-95-03X (15 µg/L), however a notable decrease in concentration at these wells relative to spring 2018 was identified. Graphical and statistical analysis of the data trends over the period of record, 2003 to 2019 (Appendix D), indicate that the total arsenic concentrations at source area well 57M-95-03X have been relatively stable, at or below 60 µg/L since 2005 (average of 32 µg/L since 2005). Arsenic concentrations at 57M-96-11X have varied more broadly over time from higher concentrations between 240 and 290 µg/L during 2003/2004 and 2015/2016 to lower concentrations in other years ranging from 148 µg/L to 192 µg/L, with 100 µg/L recorded most recently in 2019. Over the period of record analyzed, no statistically significant trends were identified at wells 57M-96-11X ($p = 0.404$) or 57M-95-03X ($p = 0.428$) at the selected 95% confidence level.

2.5.3 Water Quality Parameters

General water quality chemistry parameters (pH, temperature, specific conductivity, ORP, DO, and turbidity) were measured at each of the sampled wells during the 2019 sampling event. These parameters were measured concurrently with low-flow sampling and used to determine groundwater stabilization within each well prior to sampling. Final field readings taken prior to collection of each groundwater sample are presented in Table 2-1. The ORP and DO data are also used to determine whether reducing or oxidizing conditions are present at a specific well. Low ORP values (below 50 millivolts [mV]) and DO concentrations below 1 milligram per liter (mg/L) are generally associated with reducing conditions and may contribute to elevated arsenic, iron, and manganese concentrations in groundwater. While reducing conditions may facilitate the breakdown of petroleum hydrocarbons, they may also result in naturally occurring arsenic in the soils to mobilize by reducing the relatively insoluble arsenic (V) oxidation state to soluble arsenic (III). Such reducing conditions may also result in higher concentrations of dissolved iron and manganese in groundwater.

The ORP level at 57M-96-11X (+8.0 mV) and DO level (0.85 mg/L) are indicative of reducing conditions, contributing to the levels of dissolved metals in the shallow groundwater. The ORP and DO levels at source area well 57M-95-03X (+6.0 mV and 0.60 mg/L, respectively), also indicate the presence of a reducing environment in the shallow groundwater at that monitoring point. In the 2018 dataset, DO and OPR (+58.7 mV and 1.94 mg/L, respectively) at 57M-95-

03X indicated that marginally oxidizing conditions at the well were in effect, but the 2019 data indicate reducing conditions had returned. At 57M-95-11X, the 2018 data for DO and ORP (+39.7 mV and 0.59 mg/L, respectively) indicated that reducing conditions were in effect in 2018 and remain in effect as indicated by the 2019 data (Table 2-1). Although arsenic and manganese concentrations detected in spring 2019 at 57M-95-03X and 57M-96-11X have decreased relative to those detected in spring 2018, strict correlation of detected arsenic concentrations with changes in DO and ORP levels is not indicated, as the concentrations are decreasing while reducing conditions remain in effect.

2.6 DATA EVALUATION FOR 2019 LONG-TERM MONITORING EVENTS

Groundwater samples were collected from two AOC 57 wells and one surface water location in April 2019. Samples were submitted to Eurofins/TA for total metals (groundwater) and dissolved metals (surface water) analyses.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, LCS/LCSD recoveries, and MS/MSD recoveries), the metals results for all AOC 57 groundwater and surface water samples were acceptable as reported.

2.7 LAND-USE CONTROLS

AOC 57 is owned by the Army but leased to MassDevelopment per a Lease in Furtherance of Conveyance (LIFOC) agreement. Under the lease agreement, MassDevelopment must comply with the LUCs included within the LIFOC. Per the ROD signed in September 2001, LUCs were established to limit the potential exposure to the residual contaminated soil and groundwater under both the existing and future site conditions. The LUCs ensure that exposure to any remaining contaminated soils beneath the site is controlled. The LUCs also prohibit the extraction of groundwater from the site for industrial or potable water supply use. These LUCs are to be incorporated either in full or by reference into all deeds, easements, mortgages, leases, or any other instruments of transfer prior to the transfer of the property to MassDevelopment, until such time that soil and groundwater concentrations reach cleanup goals. During the Five-Year Review process, existing land-use is evaluated to ensure control requirements are being met. A site-specific annual LUC checklist, including physical on-site inspection and interview components, was developed in 2007 for use during LUC verification activities. The checklist is presented in Appendix E.

2.7.1 Land-Use Control Interviews

An interview was conducted on January 21, 2020 with Mr. Roy Herzig, Mr. Ron Ostrowski, and Mr. Robert Carley (MassDevelopment) and Mr. Neil Angus (Devens Enterprise Commission) regarding the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls;
- Excavations (planned or emergency) that may involve soils and groundwater in Areas 2 or 3; and
- Proposed plans for property sale, future redevelopment and construction, or demolition activities at the site.

The current tenant of the property at 112 Barnum Road, Nypro, a provider in the precision manufacturing of plastic products, has expanded their ownership within the building, but no external expansion. Prior to any construction, Nypro would need to obtain approval from

MassDevelopment. If the proposed construction lies within or encroaches upon property within the AOC 57 LUC boundaries, MassDevelopment must obtain approval from the Devens BCT prior to commencement of any construction-related and/or intrusive soil activities. There were no other changes to the site in 2019.

2.7.2 Land-Use Control On-Site Inspection

LUCs at AOC 57 were visually verified during the annual groundwater sampling event and the annual in-depth LUC inspection performed in December 2019 to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants;
- Any evidence that groundwater extraction wells were installed at the site; and
- Any evidence of site use changes.

No evidence of increased exposure potential was observed during the 2019 annual inspection.

2.8 CONCLUSIONS

Based on the previous remedial activities performed at AOC 57 and evaluation of the available monitoring data, monitoring of Area 2 was eliminated in the 2015 spring sampling event (Sovereign/HGL, 2015). Annual monitoring in the spring continued at Area 3. With the LUCs in place, AOC 57 does not pose an exposure risk to current site users and is not expected to pose a risk to human health in the future.

Groundwater at Area 3 was sampled for total metals (arsenic, iron, and manganese). The total arsenic concentrations in spring 2019 decreased relative to spring 2018. The presence of arsenic above the cleanup goal at both wells appears to be related to similarly elevated iron and manganese concentrations. ORP and DO levels in the groundwater at upgradient well 57M-95-03X and downgradient well 57M-96-11X in spring 2019 indicated the presence of a reducing environment. As a result, the detected levels of metals at these wells may be attributable to the mobilization of metals in the natural soil matrix into the shallow groundwater.

Groundwater sampling results during the period 2017 to 2019 indicate that arsenic concentrations are decreasing, however no statistically significant trends were detected within the longer term dataset at the level of confidence selected. As indicated by the current literature, metals can be expected to come out of solution (precipitate) when the aquifer reverts to more permanent oxidizing state within the impacted area, or when the impacted groundwater reaches and expands into an oxidizing environment. The shallow groundwater at AOC 57 flows toward Cold Spring Brook and LTM sampling results for surface water adjacent to Area 3 have not identified arsenic concentrations at levels greater than the USEPA Water Quality Criterion (monitoring benchmark) of 150 µg/L.

Dissolved iron concentrations in the Area 3 surface water (57-AREA3-SW-1) had been consistently above the monitoring benchmark since spring 2011. However, the detected iron concentration in spring 2019 was below the monitoring benchmark.

The 2019 monitoring results are consistent with the conceptual site model (HGL, 2008). After the removal of the source area in soil, natural attenuation processes have effectively reduced the remaining concentrations of site COCs (tetrachloroethene [PCE], cadmium, 1,4-dichlorobenzene, PCBs, and extractable petroleum hydrocarbon C_{11}-C_{22} aromatic carbon range) to below their respective remediation goals without offsite migration. Reducing conditions in the aquifer (low DO and ORP) are a typical byproduct of the biodegradation of fuel products and may result in

naturally occurring arsenic and manganese in soil mobilizing into groundwater. Based on observations at other fuel-contaminated sites, once the fuel products have been attenuated, the dissolved metals in the groundwater can be expected to come out of solution (precipitate) and revert to their pre-existing stable geochemistry and dissolved-phase concentrations will decrease (American Petroleum Institute [API], 2011).

Arsenic concentrations in groundwater at AOC 57 have decreased in the years following removal of the source of contamination. Downgradient of the site, the arsenic concentrations in surface water do not exceed the USEPA Water Quality Criterion and most of the samples (15 of 21 samples) at the longest sampled surface water location at Area 3 (57-AREA 3-SW-1) were below the groundwater MCL, including during the 2019 sampling event (Table 2-3). Also, historical results from AOC 57 Area 2 surface water sampling indicate a decrease in arsenic concentrations in surface water to below the groundwater MCL in 2008 through 2014 (KGS, 2016b).

The Remedial Action selected in the ROD included the implementation of LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. During 2019, observations were made to identify any signs of increased exposure potential. No evidence of increased exposure potential was observed. Although access to the site is not restricted, the site is remote and the building on the property blocks direct access, thereby making the site less accessible.

The Army will continue to perform LTM and LUC inspections of the site until conditions warrant discontinuation of sampling and change in LUC implementation. The next LTM sampling event is planned for spring 2020. A supplemental sampling event was conducted in January-March 2020 in order to support the development of the 2020 Five-Year Review by addressing potential data gaps in the understanding of groundwater flow and the extent of groundwater impacts at AOC 57. Results of the supplemental sampling are provided in Appendix G.

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3.0 AREA OF CONTAMINATION 69W

3.1 SITE BACKGROUND

AOC 69W is located by the northeast corner of the intersection of Jackson Road and Antietam Street on the northern portion of what was formerly the Main Post at Devens (Figure 1-1). AOC 69W is located within the Zone II area associated with the MacPherson Well (Figure 3-1). AOC 69W consists of the former Devens Elementary School (Building 215), its associated parking lot, and the adjacent lawn extending approximately 300 feet northwest to Willow Brook (Figure 3-1). The building is currently home to the Francis W. Parker Charter Essential School. Impacts at AOC 69W are attributed to two separate releases of No. 2 heating oil in 1972 and 1978. It is estimated that 7,000 to 8,000 gallons of No. 2 heating oil were released into soil from each event.

The 1972 release occurred during the installation of a new 10,000-gallon underground storage tank (UST). The release was addressed, in part, by the installation of an oil skimmer near the release point to recover the released heating oil. A secondary control measure involved the installation of a 250-gallon underground concrete collection vault placed approximately 250 feet to the northwest to capture oily water. It is not clear how many gallons of heating oil or oily water were recovered, although it is estimated that the 250-gallon vault was pumped out every three months for a period of time (HLA, 1999a).

The 1978 release resulted from a failed piping joint in the oil pipes that led to the old boiler. A large excavation was completed on the north side of the school adjacent to the loading dock to locate the source of the release. Reports indicate that residual oil was collected from the excavation for one month before the damaged piping was found and replaced (HLA, 1999a). Shortly after the release, an oily sheen was reported in Willow Brook and the associated wetlands north of the school. More than 2,000 gallons of residual oil was captured with the oil recovery system. A removal action was performed in 1998 that included the removal of approximately 3,500 cubic yards of petroleum-contaminated soil, the oil recovery system's 250-gallon underground vault and its associated piping, and the 10,000-gallon UST. The soil removal action was limited by the presence of the building.

Several investigations have been performed to identify impacts to surface and subsurface soil and groundwater at AOC 69W. The ROD issued for AOC 69W in June 1999 selected "Limited Action" as the remedy for subsurface soils and groundwater and included LTM, LUCs, and five-year reviews. The intent of the ROD was primarily to address soil and groundwater contaminated with fuel oil. The LTM was developed to monitor for any potential off-site migration of contaminants and to verify that elevated concentrations decreased over time. The 1999 ROD listed arsenic and MassDEP EPH and VPH as the monitored analytes. Sampling for VPH was discontinued in 2014.

Based on detections of manganese in groundwater at the well-point 69WP-08-01 installed in 2008, the Army installed an additional downgradient well-point 69WP-13-01 in 2013 to monitor for potential manganese migration.

The construction of a modular building expansion for the rear portion of the Frances W. Parker Charter Essential School was completed in 2009. The AOC 69W remedy and sampling program were not impacted by the construction activities.

3.2 GROUNDWATER HYDROLOGY

During the fall 2019 LTM event, water levels were collected from the following 16 vicinity wells and piezometers at AOC 69W:

69W-94-12	ZWM-95-16X	ZWP-95-01X
69W-94-13	ZWM-95-17X	ZWP-95-02X
69W-94-14	ZWM-95-18X	69WP-08-01
ZWM-01-25X	ZWM-99-22X	69WP-13-01
ZWM-01-26X	ZWM-99-23X	
ZWM-95-15X	ZWM-99-24X	

Measured water levels at AOC 69W are presented in Table 1-2. Water-table elevations for the 2019 LTM gauging event at AOC 69W are presented on Figure 3-2.

Data from the fall 2019 LTM event at AOC 69W indicate that groundwater flows in a north-northwestern direction. For the central and eastern portions of AOC 69W, groundwater flows approximately parallel to Willow Brook, which flows along the western boundary of the site. For the southwestern most portion of the site, which includes a portion of the Excavated Soils Management Area (ESMA), shallow groundwater flows toward Willow Brook. This flow pattern is consistent with historical groundwater flow patterns in this area. A groundwater gradient of 0.0058 ft/ft (Gradient Line A-A', Figure 3-2) was calculated for the 2019 LTM event. The flow line used to calculate the gradient is believed to be generally representative of groundwater flow at the site.

3.3 GROUNDWATER SAMPLING

Groundwater at AOC 69W is sampled annually in the fall. The following wells and wellpoints were sampled for the fall 2019 LTM event during October 2019:

69W-94-13

69W-94-14

ZWM-95-15X

ZWM-95-18X

ZWM-99-22X

ZWM-99-23X

ZWM-99-24X

ZWM-01-25X

69WP-08-01

69WP-13-01

3.4 ANALYTICAL RESULTS

The fall 2019 sampling event consisted of collecting eight groundwater monitoring well samples, two well-point samples, and one field duplicate sample. In accordance with the 2015 LTMMP, the groundwater samples were analyzed for MassDEP EPH and dissolved metals (arsenic, iron, and manganese); the sample from well-point 69WP-08-01 was analyzed for dissolved metals only, and the sample from well-point 69WP-13-01 was analyzed for dissolved manganese only. Samples were analyzed at Eurofins/TA for dissolved metals and submitted to Katahdin for EPH analysis.

The fall 2019 analytical results are summarized in Table 3-1 and on Figure 3-3 and Figure 3-4.

3.4.1 October 2019 Data Summary

- Dissolved Metals – Dissolved arsenic concentrations exceeded the 10 µg/L MCL standard in samples from 4 of 9 monitoring points (44%): 69W-94-13 (70 µg/L), ZWM-95-15X (17 µg/L), ZWM-99-22X (150 µg/L), and ZWM-99-23X (24 µg/L). The other arsenic results were non-detect or were detected at concentrations below the MCL. Manganese concentrations exceeded the background level of 291 µg/L in 7 of 10 monitoring points (70%): 69W-94-13 (1,600 µg/L), 69W-94-14 (1,200 µg/L), 69W-95-15X (690 µg/L), ZWM-99-22X (1,100 µg/L), ZWM-99-23X (770 µg/L), ZMW-01-25X (6,200 µg/L), and 69WP-08-01 (1,300 µg/L). Manganese was detected below the background in the other sampled monitoring points. Iron was detected above the 9,100 µg/L background level in only 1 of 9 monitoring points (11%), in source area well ZWM-99-22X (10,000 µg/L). The other iron results were below the background value.
- EPH MassDEP – EPH results were non-detect or if detected below benchmark levels, with the exception of the C_{11}-C_{22} concentration at source area well ZMW-99-22X (220 µg/L). EPH concentrations are evaluated against the MassDEP GW-1 standard for comparison purposes only.

3.4.2 AOC 69W Data Trends

The results of the 2019 sampling event at AOC 69W were compared to results from previous sampling events. Historical exceedances of the monitoring criteria at AOC 69W from 2000 through 2019 are presented in Table 3-2. Graphical and statistical analyses of selected wells are presented in Appendix D.

During the fall 2019 LTM event, dissolved arsenic concentrations were detected above the 10 µg/L MCL at four wells: 69W-94-13 (70 µg/L), ZWM-95-15X (17 µg/L), ZWM-99-22X (150 µg/L), and ZWM-99-23X (24 µg/L). The arsenic concentrations at well 69W-94-13 have been variable over time and no statistically significant trend was observed ($p = 0.500$) at the selected 95% confidence level. The arsenic concentrations at well ZWM-95-15X have been variable, with minor increases in 2017 and 2018 followed by a minor decrease in 2019; no statistically significant trend was identified ($p = 0.162$). No statistically significant trend in arsenic concentrations was noted at well ZWM-99-22X ($p = 0.034$) for the dataset collected from spring 2000 to spring 2017; however, arsenic concentrations have been consistently decreasing from 2009 to 2015, with minor increases in 2016, 2017, and 2018. The dataset through 2019 has no significant trends ($p = 0.069$). The arsenic concentrations at well ZWM-99-23X have been variable, with increases in both 2017 and 2018 followed by a decrease in 2019; no statistically

significant trend was identified (p = 0.100). The arsenic concentrations at ZWM-01-25X have remained below the MCL in the seven sampling rounds since 2013 (non-detect in 2019).

Manganese concentrations have continued to fluctuate from 2000 to 2019. The 2019 results for wells 69W-94-13 (1,600 µg/L), 69W-94-14 (1,200 µg/L), 69W-95-15X (690J µg/L), ZWM-99-22X (1,100 µg/L), ZWM-99-23X (770 µg/L), ZMW-01-25X (6,200 µg/L), and 69WP-08-01 (1,300 µg/L) continue to exceed the 291 µg/L benchmark for manganese.

For wells ZWM-99-22X and ZWM-99-23X, statistically significant downward trends (p= 0.018 and p=0.004, respectively) were identified in the dataset through 2019. Manganese concentrations at well ZWM-01-25X were identified with a statistically significant upward trend for the overall dataset from 2000 to 2019 (p = 0.034). Manganese was not analyzed in 2018; however, the concentration in 2019 increased to 6,200 µg/L and the previously noted statistically significant upward trend was again identified.

The manganese concentrations at well point 69WP-08-01 have been variable, with minor decreases in 2017 and 2018 followed by a notable increase in 2019 (1,300 µg/L). The long-term data through 2019 do not identify a statistically significant trend (p = 0.152).

No statistically significant trends were observed for manganese at wells 69W-94-13 (p = 0.144) and ZWM-95-15X (p = 0.189).

Dissolved iron was detected at one monitoring well (ZWM-99-22X) at a concentration (10,000 µg/L) greater than the monitoring criterion of 9,100 µg/L.

The EPH concentrations, specifically the C_{11}-C_{22} aromatic fraction, have generally decreased over time. The C_{11}-C_{22} aromatic results from well 69W-94-13 decreased from 410 µg/L in 2016 and to non-detect (100 µg/L U) in 2017, 98 µg/L in 2018 and 77 J µg/L in 2019. The 2017 to 2019 results, while lower than previous results, are consistent with historical results, which have ranged from non-detect to 410 µg/L since fall 2002 (from a maximum of 1,900 µg/L in spring 2002). The data through 2019 do not identify a statistically significant trend (p = 0.078). The C_{11}-C_{22} results from well ZWM-95-15X have remained less than detection levels in 2017, 2018, and 2019, consistent with historic results from 2010 to 2015, following a detection at a concentration less than the monitoring criterion in 2016.

The C_{11}-C_{22} results for ZWM-99-23X have fluctuated from non-detect to levels slightly greater than the laboratory detection limits during the period of record through 2019. The C_{11}-C_{22} results for well ZWM-99-22X decreased to 170 µg/L in 2017, which is below the monitoring criterion of 200 µg/L but increased in 2018 (230 µg/L) and 2019 (220 µg/L) to greater than the criterion. C_{11}-C_{22} results for well ZWM-99-22X through 2019 indicate a statistically significant downward trend over time (p < 0.001).

The C_9-C_{18} results for all wells in 2019 were non-detect or below the monitoring criterion of 700 µg/L.

3.4.3 Water Quality Parameters

General water quality chemistry parameters (pH, temperatures, specific conductivity, ORP, DO, and turbidity) were measured at each of the wells during the 2019 sampling event. These parameters are measured concurrently with low-flow sampling and are used to determine groundwater stabilization within each well prior to sampling. Final field readings taken prior to collection of each groundwater sample are presented in Table 3-1. The ORP and DO data are

also used to evaluate whether reducing or oxidizing conditions are present at a specific well. Low ORP values (below +50 mV) and DO concentrations below 1 mg/L are generally associated with reducing conditions and may contribute to elevated dissolved arsenic, iron, and manganese concentrations in groundwater. While reductive conditions may facilitate the breakdown of some petroleum hydrocarbons, they may also result in naturally occurring arsenic in the soils to mobilize by reducing the relatively insoluble arsenic (V) oxidation state to soluble arsenic (III). Reducing conditions may also result in higher concentrations of dissolved iron and manganese.

Within the AOC 69W dataset, the relationships among ORP, DO, and dissolved metals generally follow the expected pattern. Within (well ZMW-99-22X) and directly downgradient (wells 69W-94-13, 69W-99-23X) of the source area, low levels of ORP and DO are matched with elevated concentrations of arsenic, iron, and manganese. At greater distances from, or cross gradient to the source area (wells ZMW-95-18X / ZMW-99-24X, and 69W-94-14, respectively) as the ORP and DO levels increase toward or into the oxidizing range, dissolved metals concentrations decrease significantly. For sampling points well downgradient of the source area (69WP-08-01, 69WP-13-01) and unimpacted by the source area, ORP and DO levels are in the reducing range although dissolved metals concentrations are generally low; providing an example of the degree of variability of the relationships among ORP, DO, and dissolved metals within the regional background.

3.5 DATA EVALUATION FOR 2019 LONG-TERM MONITORING EVENTS

Groundwater samples were collected from eight monitoring wells and two well points in 2019. Samples were analyzed at Eurofins/TA for dissolved metals and submitted to Katahdin for EPH analysis. The sample analytical results are presented in Table 3-1.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, LCS/LCSD recoveries, and MS/MSD recoveries), the dissolved metals sample results were acceptable as reported. Surrogate recoveries for the EPH analysis were outside acceptance limits for the aliphatic hydrocarbon fraction; EPH results were qualified as estimated (UJ/J) in three samples (ZWM-01-25X, 69W-94-13, and ZWM-99-24X). No other qualifications were needed.

3.6 LAND-USE CONTROLS

Ownership of AOC 69W was transferred from the Army to MassDevelopment in August 2007. MassDevelopment later transferred ownership of AOC 69W to the Francis W. Parker Charter Essential School, the current owner of the property. LUCs were implemented to limit potential exposure to contaminated soil and groundwater under existing and future site conditions, per the 1999 ROD and a subsequent deed (Deed, 2007). The LUCs ensure that the remaining contaminated soils beneath and adjacent to the building are not excavated. The LUCs also prohibit the extraction of groundwater from the site for industrial or potable water supply use. Existing land use is evaluated as part of the Five-Year Review process to ensure control requirements are being met. A site-specific annual LUC checklist, including physical onsite inspection and interview components, was developed in 2007 for use during LUC verification activities. The checklist is presented in Appendix E.

3.6.1 Land-Use Control Interviews

An interview was conducted on January 21, 2020 with Mr. Roy Herzig, Mr. Ron Ostrowski, and Mr. Robert Carley (MassDevelopment); Mr. Neil Angus (Devens Enterprise Commission). Ms. Michelle McKenna (Business Manager - Francis W. Parker Charter Essential School) provided

responses to the interview questions on January 10, 2020. The interview questions consisted of the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls;
- Presence of extraction wells at the property;
- Excavations (planned or emergency) that may have extended to soil below two feet north of the school within the ESMA delineated on Figure 3-1;
- The source of public drinking water for the property; and
- Proposed plans for property sale, future redevelopment, and construction or demolition activities at the site; and
- Site access for monitoring.

Ms. McKenna indicated that internal HVAC and sidewalk/retaining wall work is planned in the corner of the building near the ESMA as planned, but all work is not planned to extend below 2 feet.

In addition, businesses adjacent to the property potentially may erect fencing in 2020.

The interviews inadvertently included references to excavations of soil below two feet. References to excavations of soil below two feet will be eliminated from future interviews.

3.6.2 Land-Use Control On-Site Inspection

LUCs were visually verified during the annual groundwater sampling event and the annual in-depth LUC inspection performed in December 2019 to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants;
- Any evidence (repaved cut marks or penetrations in the pavement) within the ESMA that have not been otherwise identified and properly documented by the property owner;
- Any evidence that groundwater extraction wells had been installed at the site; and
- Any evidence of site use changes.

The Francis W. Parker Charter Essential School currently occupies the property; and MassDevelopment supplies potable water to the school. There were no excavations or penetrations through pavement within the ESMA observed during 2019. No groundwater extraction wells have been installed on the site and no evidence of increased exposure potential was observed during the 2019 annual LUC inspection.

3.7 CONCLUSIONS

The cleanup goal for arsenic is the MCL (10 µg/L), the monitoring criteria for iron (9,100 µg/L) is set at background levels, and the monitoring criteria for manganese (375 µg/L) is risk based. EPH concentrations are evaluated against MCP standards for comparison purposes, but the MCP standards are not considered cleanup goals under the ROD.

Arsenic levels remain above the 10 µg/L cleanup level in groundwater wells 69W-94-13 (70 µg/L), ZWM-95-15X (17 µg/L), ZWM-99-22X (150 µg/L), and ZWM-99-23X (24 µg/L). Arsenic was non-detect in the 2019 samples from the downgradient well point 69WP-08-01 and wells ZMW-94-14, ZWM-95-18X, ZWM-99-24X, and ZMW-01-25X.

Iron was detected at one well (ZWM-99-22X) at a concentration (10,000 µg/L) greater than the monitoring criterion.

The manganese criterion of 375 µg/L was exceeded at wells 69W-94-13 (1,600 µg/L), 69W-94-14 (1,200 µg/L), ZWM-99-15X (690 µg/L), ZWM-99-22X (1,100 µg/L), ZWM-99-23X (770 µg/L), and ZMW-01-25X (6,200 µg/L), and well point 69WP-08-01 (1,300 µg/L). Manganese was below the monitoring criterion at monitoring wells ZWM-95-18X and ZWM-99-24X and downgradient well point 69WP-13-01.

Elevated dissolved metals, including arsenic and manganese, are believed to be attributable to reducing conditions resulting from the degradation of hydrocarbon compounds in groundwater. The metals dissolution is self-limiting once the hydrocarbon source is mitigated and is not expected to migrate a significant distance beyond the original hydrocarbon release point. As indicated in Figure 3-4, arsenic concentrations greater than the cleanup have not migrated to downgradient monitoring points ZWM-95-18X, 69WP-08-01, or 69W-13-01. Over time, as the reducing conditions return to oxidizing conditions, the concentrations of elevated dissolved metals are anticipated to decrease, as evidenced at source area well 69W-94-13. As shown below for source area well 69W-94-13, decreases in arsenic and manganese concentrations were observed several years prior to 2018 as more oxidizing conditions were present in the aquifer. Increases were noted for 2018 and 2019 as more reducing conditions were identified.

Recent Results from 69W-94-13

Sample Year	Arsenic (µg/L)	Manganese (µg/L)	Dissolved Oxygen (mg/L)	ORP (mV)
2014	101	1,940	0.2	-53.7
2015	120	2,050	0.21	-85.9
2016	76	2,600	1.79	-103.7
2017	24	320	2.66	140.2
2018	35	1,600	9.1	0.70
2019	70	1,600	0.16	-26

The detected arsenic and manganese concentrations have fluctuated in recent years in response to changes to the ORP/DO levels in the shallow groundwater.

EPH C_{11}-C_{22} aromatics were detected in groundwater at well 69W-94-13 at an estimated concentration (77 J µg/L) below the 200 µg/L benchmark. The detected concentration at ZWM-99-22X (220 µg/L) was greater than the benchmark. The EPH C_9-C_{18} and C_{19}-C_{36} aliphatic hydrocarbons were detected at 69W-94-13, ZWM-99-22X, and ZWM-99-23X (C_{19}-C_{36} only) at concentrations well below the benchmarks.

Groundwater sampling results indicate that, overall, COC concentrations have remained consistent with minor fluctuations since 2009 and the potential for EPH off-site migration has decreased over time. Sampling results at AOC 69W sentry wells indicate that EPH and arsenic are not migrating offsite in groundwater at concentrations above the cleanup goals and monitoring criteria.

Current literature (e.g., API Groundwater Arsenic Manual, API Publication 4761, February 2011) describing the relationships among inorganic analytes and petroleum hydrocarbon releases in groundwater clearly supports the linking of ORP, pH, and adsorptive characteristics of aquifer materials with concentrations of inorganic analytes such as arsenic and manganese. The projection that elevated metals will decrease over time, as noted by the CSM for AOC 69W, is supported by the literature as well as the data for a number of wells at this AOC. For specific areas/wells where elevated metals remain although aquifer conditions have progressed to a more oxidizing state, it is appropriate to note that the re-adsorption of metals by soil particles is controlled by the adsorptive ability of the soil as well as by the oxidizing state of the groundwater. The presence of metal oxyhydroxides that can adsorb and bind metals such as arsenic and manganese is required to support the attenuation of metals. The specific mineral composition of the soils across the AOC varies, indicating that their adsorptive ability would be similarly variable. Therefore, the timeframes within which dissolved metals concentrations decrease will vary similarly at specific areas within AOC 69W. The LTM data also indicate that the trend toward a more oxidizing environment in the shallow groundwater identified in the 2016 and 2017 data, has reverted, in the short term, to a more reducing environment shown by the 2018 and 2019 data, with resultant increases in dissolved metals concentrations. The LTM program, as designed, allows for continued monitoring to evaluate the progression of changes in the dissolved metals concentrations.

The ROD remedy includes LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. No evidence of increased exposure potential was observed during the 2019 annual LUC inspection. The Army will continue LTM activities and LUC inspections until conditions warrant a change in LTM activities. LUCs are likely to remain in place at AOC 69W for the near future.

4.0 AREA OF CONTAMINATION 43G

4.1 SITE BACKGROUND

AOC 43G is in the central portion of the former Main Post of Fort Devens (Figure 1-1). It is located at the southwestern corner of Feinburg Road and Queenstown Street. The layout of AOC 43G is depicted on Figure 4-1. AOC 43G consists of the former Army Air Force Exchange Service (AAFES) gas station (Areas 2 and 3) and historical Gas Station G (Area 1) and has been the subject of RIs associated with petroleum contamination resulting from the past operations. The former gas station was used as a motor pool fueling station during the World War II era. The identified USTs at AOC 43G have been removed.

In 1996, the Army conducted a FS to evaluate potential remedial alternatives and signed a ROD to document the selected remedy. The October 1996 ROD selected Remedial Action for AOC 43G relies on intrinsic bioremediation, groundwater and contaminant modeling, and long-term groundwater monitoring to evaluate the effectiveness of the alternative at controlling groundwater contamination and site risk. Intrinsic remediation is a remedial approach that relies on natural attenuation to remediate contaminants in the subsurface. The remedy will mitigate existing groundwater contamination through natural attenuation and bioremediation and reduce the potential risk of future commercial/industrial exposure to contaminated groundwater. Components of the selected remedy included assessment, data collection, groundwater modeling, LTM, annual reporting to USEPA and MassDEP, and performing Five-Year Reviews. Groundwater sampling results and modeling indicated that intrinsic remediation is a viable remedial option for AOC 43G.

4.2 GROUNDWATER HYDROLOGY

During the fall 2019 LTM event, water levels were collected from the following 17 wells and piezometers at AOC 43G:

XGM-93-02X	XGM-94-12X	43GPZ-19-02
XGM-94-04X	AAFES-2	43GPZ-19-03
XGM-94-06X	AAFES-5	43GPZ-19-04
XGM-94-07X	AAFES-6R	43GPZ-19-05
XGM-94-08X	AAFES-7	43GPZ-19-06
XGM-94-10X	43GPZ-19-01	

Measured water levels at AOC 43G for the fall 2019 LTM event are presented in Table 1-2. Water-table elevations for the 2019 LTM gauging event at AOC 43G are presented on Figure 4-2. An analysis of data from the fall 2019 LTM event identified groundwater flow to be in a west-to-east direction, which is consistent with the site's surface topography and historical flow patterns. Additional groundwater elevation data for monitoring points to the northeast of AOC 43G suggest that the shallow groundwater in the northern portions of AOC 43G trends slightly toward the northeast. The shallow groundwater flow pattern in the central portion of AOC 43G is generally toward the Robbins Pond drainage area, located approximately 450 feet to the east of sentinel well AAFES-7. A groundwater gradient of 0.033 ft/ft (Gradient Line A-A', Figure 4-2) was calculated for the fall 2019 LTM event. The flow line used to calculate the gradient is believed to be representative of groundwater flow at the site.

4.3 GROUNDWATER SAMPLING

Groundwater sampling activities at AOC 43G were conducted in October 2019; the following wells were sampled in accordance with the 2015 LTMMP:

- AAFES-2
- AAFES-7
- XGM-93-02X
- XGM-94-04X
- XGM-97-12X

For the October 2019 event, the following additional monitoring wells were sampled for total iron and manganese only:

- XGM-94-06X
- XGM-94-07X
- XGM-94-08X

4.4 ANALYTICAL RESULTS

The analytical results for the 2019 LTM event at AOC 43G are summarized in Table 4-1. A summary of the exceedances over time at AOC 43G from 1999 to 2019 is presented in Table 4-2. The VPH and alkalinity data for the 2019 LTM event are illustrated on Figure 4-3. Total metals results are illustrated on Figure 4-4.

4.4.1 October 2019 Data Summary

- VOCs – Target VOCs; methyl tert-butyl ether, benzene, ethylbenzene, *m*,*p*-xylenes, *o*-xylene, and toluene were either non-detect or were below the applicable cleanup goals and monitoring criteria in each of the sampled wells.
- Metals – Total manganese was detected in each of the sampled monitoring wells with concentrations ranging from 86 µg/L at well AAFES-7 to 5,500 µg/L at XGM-94-04X. Total manganese concentrations exceeded the cleanup goal of 375 µg/L in groundwater at six of the eight (75%) monitoring wells sampled. Total iron was detected above the 9,100 µg/L cleanup goal level at 2 of the 8 (25%) monitoring wells: AAFES-2 (20,000 µg/L), and XGM-93-02X (9,300 µg/L).
- VPH Carbon Fractions – VPH concentrations are evaluated against MCP standards for purposes of comparison. The C_5-C_8 aliphatics were detected above the monitoring criterion in 3 of 4 (75%) wells sampled, with the highest value at source area well AAFES-2 (1,200 µg/L). The C_9-C_{10} aromatics were detected above the monitoring criterion in 3 of 4 (75%) wells sampled with the highest value at source area well AAFES-2 (1,400 µg/L). The C_9-C_{12} aliphatics were detected above the monitoring criterion only at source area well AAFES-2 (790 µg/L).
- Alkalinity measured in samples from selected wells ranged from 66 to 170 mg/L (calcium carbonate equivalents). No monitoring criterion is established for this parameter.

4.4.2 AOC 43G Data Trends

The 2019 LTM results were compared to previous sampling events. Historical exceedances of the cleanup goals from 1999 through 2019 are presented in Table 4-2. Graphical and statistical

analyses of selected wells are presented in Appendix D. Statistical analyses were compared to a 95% confidence level.

Benzene concentrations at wells AAFES-2, XGM-93-02X, and XGM-97-12X have remained below the cleanup goal (5 µg/L) for six sampling events during the period 2014-2019. Toluene concentrations at well XGM-97-12X have remained below the cleanup goal since 2003.

Total manganese concentrations at six of eight AOC 43G wells sampled exceeded the 375 µg/L cleanup goal; manganese at two of six wells were associated with high total iron concentrations. Manganese concentrations at downgradient wells XGM-94-06X, XGM-94-07X, and XGM-94-08X were greater than the cleanup goal but were similar to levels identified in monitoring periods prior to 2015, indicating that manganese levels in the groundwater at these wells have remained stable. Statistically significant downward trends for manganese were identified for three of four wells (75%) evaluated in 2019: AAFES-2 ($p = 0.003$), XGM-93-02X ($p = 0.005$), and XGM-97-12X ($p = 0.003$). No statistically significant trends were identified for manganese at well AAFES-7 ($p=0.320$) and XGM-94-04X ($p = 0.225$). Statistically significant downward trends in iron concentrations were identified for three wells in 2019: AAFES-2 ($p = 0.017$), XGM-93-02X ($p = 0.008$), and XGM-97-12X ($p = 0.039$).

VPH monitoring criteria were established by the Army to evaluate intrinsic remediation at AOC 43G. The ROD does not include VPH as a cleanup goal, but the analysis is used to gauge the cleanup of the site and to determine whether a risk-based standard needs to be developed. VPH concentrations are evaluated against MCP standards for comparison purposes.

The historical dataset through 2019 (Table 4-2) for wells located in the source area and in the area of the historical extent of groundwater impacts identify fluctuations in VPH C_9-C_{10} aromatics concentrations through the period of record. At well AAFES-2, C_9-C_{10} aromatics concentrations increased from 730 µg/L in 2016 to 1,100 J µg/L in 2017, followed by a decrease to 990 µg/L in 2018 and an increase to 1,400 µg/L in 2019. For well XGM-97-12X C_9-C_{10} aromatics increased from 340 µg/L in 2016 to 1,000 µg/L in 2018, followed by a decrease to 340 µg/L in 2019. At well XGM-94-04X C_9-C_{10} aromatics increased from 320 µg/L in 2016 to 410 J µg/L in 2017, decreased to non-detect in 2018 and increased to 830 µg/L in 2019. No statistically significant trends were identified for VPH C_9-C_{10} aromatics at well XGM-94-04X ($p = 0.149$). However, the long-term dataset identifies statistically significant decreasing trends for wells AAFES-2 ($p < 0.001$), XGM-93-02X ($p < 0.001$), and XGM-97-12X ($p < 0.001$).

Data for the VPH C_5-C_8 aliphatic carbon fractions appear to indicate a general downward trend for some monitoring wells following the historical highs observed in November 2005; however, fluctuations periodically occur. This cyclic pattern may be caused by seasonal fluctuations of the water table with extreme high or low precipitation events. For the 2019 sampling event, groundwater at wells AAFES-2 (1,200 µg/L), XGM-94-04X (590 µg/L), and XGM-97-12X (350 µg/L) contained VPH C_5-C_8 aliphatic hydrocarbon above the 300 µg/L monitoring criterion. A statistically significant downward data trend since the beginning of the monitoring program was noted for well XGM-97-12X ($p = 0.009$). Well XGM-94-04X ($p = 0.031$) was noted with a statistically significant upward data trend since the beginning of the monitoring program. No significant trends were identified for AAFES-2 ($p = 0.512$) and XGM-93-02X ($p = 0.249$).

The VPH C_9-C_{12} aliphatic concentrations have fluctuated since 1999. The VPH C_9-C_{12} concentrations have been below the 700 µg/L monitoring criterion since 2014, with the

exception of AAFES-2 (790 µg/L) in 2019. No statistically significant trend was identified for AAFES-2 (p=0.125) as well as for XGM-93-02X (p=0.223) and XGM-97-12X (p=0.336).

4.4.3 Water Quality Parameters

General water quality chemistry parameters (pH, initial and final temperatures, specific conductivity, ORP, DO, and turbidity) were measured at each of the wells during the 2019 sampling event. These parameters are measured concurrently with low-flow sampling and are used to determine groundwater stabilization within each well prior to sampling. The final field readings taken prior to collection of each groundwater sample at AOC 43G are reported in Table 4-1. The ORP and DO data are also used to determine whether reducing or oxidizing conditions are present at a specific well. Low ORP values (below 50 millivolts) and DO concentrations below 1 mg/L are generally associated with elevated arsenic, iron, and manganese concentrations. While reductive conditions may facilitate the breakdown of petroleum hydrocarbons, they may also result in naturally occurring arsenic in the soils to be mobilized by reducing the relatively insoluble arsenic (V) oxidation state to soluble arsenic (III). Reducing conditions may also result in higher concentrations of iron and manganese. The ORP and DO data (Table 4-1) indicate reducing conditions in the groundwater at six of eight wells sampled. Groundwater at sentinel well AAFES-7 is strongly oxidizing, and metals concentrations at AAFES-7 are less than the cleanup goals and monitoring criteria. Metals concentrations at source well AAFES-2 remain greater than cleanup goals and monitoring criteria; however, the ORP data (reducing range) and DO data (oxidizing range) do not clearly define the redox condition of the groundwater.

4.5 DATA EVALUATION FOR 2019 LONG-TERM MONITORING EVENTS

Groundwater samples were collected from eight AOC 43G wells in October 2019. The samples were analyzed at Eurofins/TA for select total metals and total alkalinity and were analyzed at Katahdin for VPH fractions at select wells. The sample analytical data are presented in Table 4-1.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, surrogate recoveries, LCS/LCSD recoveries, and MS/MSD recoveries), the data are acceptable as reported. No qualifications were needed.

4.6 LAND-USE CONTROLS

AOC 43G is currently under Army ownership. Per the October 1996 ROD, substantive requirements of LUCs that restrict access to contaminated groundwater and soil are in place at AOC 43G. The September 2007 *Addendum to the Real Property Master Plan* (U.S. Army, 2007) included supplemental information on LUCs established under BRAC and CERCLA programs that are applicable to the former AAFES Gas station. The LUCs were designed to protect the integrity and effectiveness of the remedy. Any proposed actions that affect the AOC 43G property must consider following the ROD requirements, which include:

- Ensure that the property is not used for residential purposes and prohibit the use of groundwater beneath the site;
- If the Army transfers the property by lease or deed, an Environmental Baseline Survey will be conducted to ensure that the remedy remains protective by incorporating all necessary environmental protection provisions within the FOST and the property transfer deed; and

- Any intrusive construction work must consider that residual soil and groundwater contamination has been documented for AOC 43G, and such actions should be coordinated with the Department of Public Works (DPW), and the BRAC.

In addition to the above LUCs, a site-specific annual LUC checklist, including physical on-site inspection and interview components, was developed in 2007 for use during LUC verification activities. The checklist is presented in Appendix E.

4.6.1 Land-Use Control Interviews

Mr. Robert Simeone, the BRAC Environmental Coordinator, was contacted via email regarding the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls;
- The source of public drinking water for the property; and
- Proposed plans for property sale, future redevelopment and construction, or demolition activities at the site.

Mr. Simeone stated in his email response that there were no changes to the property during 2019.

4.6.2 Land-Use Control On-Site Inspection

LUCs were visually verified during the annual groundwater sampling event and the annual in-depth LUC inspection performed in December 2019 to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants;
- Any evidence that groundwater extraction wells had been installed at the site; and
- Any evidence of site use changes.

No evidence of increased exposure potential was observed during the 2019 annual LUC inspection

4.7 CONCLUSIONS

The ROD identifies site-specific groundwater cleanup goals for COCs at AOC 43G including benzene, ethylbenzene, xylene, manganese, and iron. Toluene and VPH monitoring criteria were not included in the ROD. For purposes of monitoring, toluene is compared to its MCL and VPH is compared to MCP standards. The Army uses the VPH concentrations to evaluate intrinsic remediation at AOC 43G and determine whether risk-based standards need to be developed.

Benzene, ethylbenzene, and xylenes results are either non-detect or below the cleanup goals in each of the sampled wells.

Manganese exceedances were noted in six of the eight wells sampled in 2019. Statistically significant downward trends in manganese concentrations were identified for three wells, AAFES-2, XGM-93-02X, and XGM-97-12X. Iron exceedances were noted in two of the eight wells sampled in 2019. Statistically significant downward trends in total iron concentrations were identified at three wells in 2019. Manganese and iron trends will continue to be monitored in future LTM events.

Detected concentrations of C_5-C_8 aliphatics and C_9-C_{10} aromatics exceed the monitoring criteria at source area well AAFES-2 and wells XGM-94-04X and XGM-97-12X. C_9-C_{12} aliphatics

concentrations were greater than the monitoring criterion at AAFES-2. VPH concentrations are expected to be present within this area. The C_5-C_8 aliphatic and C_9-C_{10} aromatic compounds were non-detect at well XGM-94-04X in 2018, and increased to levels greater than the monitoring criteria in 2019. Concentrations for these compounds have fluctuated as indicated by the long-term dataset. VPH trends at well XGM-94-04X will continue to be monitored in future LTM events.

The ROD remedy includes LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. No evidence of increased exposure potential was observed during the 2019 annual LUC inspection. The Army will continue to perform LTM and LUC inspections until site conditions warrant discontinuation of sampling and change in LUC implementation. A supplemental sampling event was conducted in January-March 2020 in order to support the development of the 2020 Five-Year Review by addressing potential data gaps in the understanding of groundwater flow and the extent of groundwater impacts at AOC 43G. Results of the supplemental sampling are provided in Appendix G.

5.0 AREAS OF CONCERN 32 AND 43A

5.1 SITE BACKGROUND

AOC 32 and 43A are located east of Cook Street and north of Independence Drive (Figure 5-1). A portion of AOC 32 intersects a Zone II aquifer protection area[2]. Five Grove Pond wells (PWS IDs 2019000-01G, 2019000-02G [inactive],2019001-06G, 2019001-07G, and 2019001-08G) are located within this Zone II protection area. AOC 32 (DRMO Yard) was an active materials storage facility from approximately 1964 to 1995. It consisted of three fenced areas where various materials were processed and stored, and which contained a former waste oil UST (UST #13). The tank was removed in 1992 and contaminated soils were excavated and disposed of off-site. COCs historically have included VOCs, petroleum hydrocarbons, and lead. Arsenic and manganese have also exceeded site criteria. Monitored Natural Attenuation (MNA) was the selected remedy for addressing the groundwater contamination. Figure 5-1 shows the new warehouse overlying the footprint of the former AOC features.

AOC 43A (POL Storage Area) served as the central distribution point for all gasoline stations at Fort Devens during the 1940s and 1950s and was subsequently used to store fuels for various purposes. The distribution facility consisted of a main gasoline station, a pump house, four 12,000-gallon USTs, one 10,000-gallon UST, two 12,000-gallon above-ground storage tanks (AST), and two 8,000-gallon ASTs. Gasoline was delivered by rail car and transferred to the tanks. The POL Storage Area consisted of a fenced lot within a developed industrial area of buildings, roads, and grass lots. The site investigation indicated that a low level of xylene and an elevated level of petroleum hydrocarbons existed in the subsurface soils. The RI concluded that groundwater contamination required a remedial action evaluation. After the FS was completed, MNA was chosen as the selected remedy for groundwater and incorporated into the 1998 ROD.

Quarterly groundwater sampling conducted between January and October 1999 at AOCs 32/43A demonstrated that the plume was not migrating. Semi-annual sampling rounds were implemented to monitor the downward trend of concentrations over time (Stone and Webster Environmental Technology & Services, 2000a and 2000b). It was concluded that additional sampling was needed to determine if the future warehouse installation would influence the migration of contaminants or groundwater hydraulics. Groundwater sampling was discontinued at AOC 43A in fall 2005 because cleanup goal exceedances had not been observed at AOC 43A wells since 2002. Wells SHL-15 and 32M-92-01X were removed from the sampling program in 2007 because they are located hydraulically cross-gradient/upgradient of historical source areas and are not likely to be influenced by either source area. Each well was retained for the collection of groundwater level data. A Remedial Action consisting of injection of a persulfate oxidant was implemented in February 2009 to augment the MNA remedy at AOC 32 in the vicinity of the former USTs. The remedial action targeted the remaining site COCs, including the dichlorobenzene isomers, at well 32M-01-18XBR. The findings and conclusions for this Remedial Action are reported in the 2009 *AOCs 32 & 43A Persulfate Injection Letter Report* (HGL, 2009).

[2] MassDEP establishes public water supply protection areas in accordance with the Drinking Water Regulations at 310 CMR 22.02. In part, a Zone II groundwater protection area is defined as the area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated.

5.2 GROUNDWATER HYDROLOGY

During the April 2019 LTM event, water levels were collected from the following 26 wells and piezometers at AOC 32/43A:

Overburden Wells

SHL-15	SHL-25	43M-01-16XOB
32M-92-01X	32Z-01-05XOB	43M-01-17XOB
32Z-99-02X (32M-92-02X)	32Z-01-07XOB	43M-01-20XOB
32M-01-14OXB	32Z-01-08XOB	
32M-92-03X	32Z-01-09XOB	

Bedrock Wells

32M-01-13XBR	32M-01-18XBR	43M-01-16XBR
32M-01-14XBR	32Z-01-06XBR	43M-01-17XBR
32M-01-15XBR	32Z-01-10XBR	43M-01-20XBR
32M-01-16XBR	32Z-01-11XBR	
32M-01-17XBR (32M-01-7X)	32Z-01-12XBR	

Measured water levels at AOC 32/43A for the April 2019 LTM event are presented in Table 1-1. Overburden and bedrock water table elevation maps prepared for AOCs 32 and 43A show that groundwater generally flows to the south/southwest in the overburden and the bedrock, with a component of southeasterly flow on the east side of the area (Figure 5-2 and Figure 5-3, respectively) which is consistent with the site's historical flow patterns. The eastern margin of AOC 32 and 43A overlaps the western edge of the Zone II wellhead protection area for the Grove Pond wells, and the mapped groundwater flow direction in both overburden and bedrock is toward Zone II in this area of AOC 32/43A.

The groundwater gradient to the south-southwest for overburden wells (0.023 ft/ft - Gradient Line A-A', Figure 5-2) was calculated during the April 2019 monitoring event. The gradient to the southeast (0.027 ft/ft - Gradient Line B-B', Figure 5-2) was calculated from the April 2019 data.

The groundwater gradient for bedrock wells was calculated to be 0.017 ft/ft (Gradient Line A-A', Figure 5-3) to the south-southwest and 0.032 ft/ft (Gradient Line B-B', Figure 5-3) for flow from the northeastern portion of the site to the southeast. The flow lines used to calculate the gradient are believed to be representative of groundwater flow at the site.

Three sets of overburden and bedrock well pairs were assessed with respect to the presence of vertical gradients. Vertical gradients (unitless) calculated from the shallow wells to the deeper wells represent the differences in hydraulic head (in feet) divided by the distances between the midpoints of the screened intervals for the wells (in feet). The results of the assessment are presented in the following table.

Monitoring Well	Groundwater Elevation	Screened Interval	Mid-Point of Well Screen	Downward Gradient	Upward Gradient
43M-01-16-XOB	233.43	223.9-233.9	228.9	--	0.0114
43M-01-16-XBR	233.70	200.3-210.3	205.3		
43M-01-17-XOB	233.13	225.9-235.9	230.9	--	0.0241
43M-01-17-XBR	233.71	201.8-211.8	206.8		
43M-01-20-XOB	232.69	224.7-234.7	229.7	0.0217	--
43M-01-20-XBR	231.73	180.4-190.4	185.4		

* All elevations in Feet MSL.

The bedrock in this area, as described by core samples obtained from the borings at well locations 32Z-01-06XBR and 43M-01-20XBR, is comprised of a metamorphic suite of rock types, with mottled white-gray fine to coarse grained gneiss and gray aphanitic to medium grained quartzite present at 32Z-01-06XBR and light gray aphanitic to coarse grained conglomerate with gneissic foliation at 43M-01-20-XBR.

5.3 GROUNDWATER SAMPLING

Groundwater sampling at AOCs 32 and 43A was reduced to an annual event in the 2015 LTMMP (Sovereign/HGL, 2015). Wells sampled during the 2019 LTM event consisted of 32M-01-13XBR, 32M-01-14XOB, 32M-01-17XBR, and 32M-01-18XBR.

At the request of USEPA, two additional bedrock monitoring wells (32M-01-15XBR and 32M-01-16XBR) were sampled in October 2019 as a one-time sampling event to verify that groundwater contamination has not migrated east of the site. The results for VOCs, VPH Carbon Fractions, and VPH Target Analytes (BTEX) were non-detect or below the monitoring criteria (Table 5-1); therefore, no further sampling of these wells is required at this time.

5.4 ANALYTICAL RESULTS

The 2019 LTM event consisted of four monitoring well samples from AOC 32/43A. The groundwater analytical results for the LTM event are reported in Table 5-1. VPH concentrations from the 2019 LTM event are illustrated on Figure 5-4. Total metal concentrations for the 2019 LTM event are illustrated on Figure 5-5.

5.4.1 April 2019 Data Summary

- VOCs – Groundwater collected at source area monitoring well 32M-01-18XBR contained concentrations of 1,4-dichlorobenzene (1,4-DCB) (29 µg/L) above the cleanup goal of 5 µg/L and chlorobenzene (180 µg/L) above the monitoring criteria of 100 µg/L. The other VOC results for 32M-01-18XBR were either below respective cleanup goals and monitoring criteria or were non-detect. VOCs detected at 32M-01-17XBR were below cleanup goals and VOCs at the other two downgradient wells sampled were all non-detect.

- Total Metals – Total arsenic was detected in groundwater at a concentration above the 10 µg/L cleanup goal at downgradient monitoring well 32M-01-14XOB (29 µg/L). The other total arsenic results were either non-detect or were detected below 10 µg/L. Manganese was not detected at the wells sampled at concentrations greater than the cleanup goal of 3,500 µg/L.
- VPH Carbon Fractions – The C_9-C_{10} aromatic results for source area well 32M-01-18XBR exceeded the monitoring criterion of 200 µg/L only for the duplicate sample (230 µg/L); the detected concentration in the primary sample was 160 J µg/L. The other VPH carbon fraction groundwater sample results were non-detect or less than the monitoring criteria.
- VPH Target Analytes – VPH target analyte (BTEX) groundwater sample results were non-detect for all samples.

5.4.2 October 2019 Data Summary

- VOCs were not detected in the groundwater samples collected at bedrock monitoring wells 32M-01-15XBR and 32M-01-16XBR (Table 5-1).
- VPH Carbon Fractions were not detected in the groundwater samples collected at bedrock monitoring wells 32M-01-15XBR and 32M-01-16XBR (Table 5-1).
- VPH Target Analytes (BTEX) were not detected in the groundwater samples collected at bedrock monitoring wells 32M-01-15XBR and 32M-01-16XBR (Table 5-1).

5.4.3 AOCs 32 and 43A Data Trends

Results from the 2019 LTM event at AOCs 32 and 43A were compared to results from previous sampling events. Historical exceedances of the cleanup goals from 2006 through 2019 for AOCs 32 and 43A are summarized in Table 5-2, and a summary of the cleanup goal exceedances from 2002 to 2019 for source area well 32M-01-18XBR is presented in Table 5-3. Graphical and statistical analyses of selected wells are presented in Appendix D. Statistical analyses were compared to a 95% confidence level.

A major contributor to the decrease in COC concentrations in groundwater is the February 2009 sodium persulfate injection performed near source area monitoring well 32M-01-18XBR. Prior to the 2009 injection, COC concentrations, primarily dichlorobenzene (DCB) isomers, exhibited seasonal fluctuations and no definitive concentration trend. Post injection monitoring reveals COC concentration reductions with values below pre-injection levels. The spring 2018 data indicated increases in DCB concentrations, although still below previous historical high values. The spring 2019 data identified notable decreases for all DCB compounds. DCB concentration trends will continue to be monitored in future LTM events. No additional persulfate injections are currently planned because of the overall, long-term trend of diminishing COC concentrations. As shown in Table 5-3, trichloroethene (TCE) concentrations at source area well 32M-01-18XBR have remained below the monitoring criterion since fall 2004 and have largely remained non-detect or detected at trace levels (estimated values below the laboratory detection limit) since October 2007. Bromodichloromethane at well 32M-01-18XBR has been non-detect since October 2006.

The target VOCs 1,2-DCB, 1,3-DCB, and 1,4-DCB had been detected above their respective cleanup goals in groundwater at well 32M-01-18XBR from 2002 to 2009. Following the

February 2009 sodium persulfate injection, the three isomers have exhibited concentration declines.

Concentrations of the three isomers have exhibited inter-related trends that fluctuated from event to event that is likely the result of sequential microbial dechlorination and degradation reactions. 1,2-DCB at 32M-01-18XBR had been generally at or below the cleanup goal since May 2010 with an increase to greater than the goal in 2018 (840 µg/L). The concentration decreased again to less than the goal in 2019 (250 J µg/L).

Similarly, 1,3-DCB had been below the cleanup goal since June 2014 and had shown a statistically significant downward concentration trend following the injection in 2009 through 2017, but was detected at a concentration (159 µg/L) greater than the goal in 2018, followed by a concentration (41 J µg/L) less than the goal in 2019. Only 1,4-DCB has been detected consistently above its cleanup goal (5 µg/L) at source well 32M-01-18XBR, including for the 2019 sample (29 J µg/L). 1,4-DCB concentrations have shown a statistically significant downward trend ($p < 0.001$). In spite of the 2018 increases in concentrations for all DCB compounds, both 1,3-DCB and 1,4-DCB at 32M-01-18XBR were found to have overall statistically significant downward trends for the long-term dataset through 2019.

Prior to the 2018 LTM event, the VPH C_9-C_{10} aromatics concentrations at well 32M-01-18XBR had demonstrated an overall downward trend. An increase in concentration in 2018 was identified, followed by a decrease in 2019. The increase in 2018 did not affect the overall trend, with a statistically significant downward trend confirmed ($p < 0.001$) with the 2019 data. Similarly, the VPH C_9-C_{12} aliphatic concentrations had decreased to below the monitoring criteria by 2005; the detected concentrations in 2018 and 2019 remain below the monitoring criterion. VPH concentration trends will continue to be monitored in future LTM events.

Arsenic has been periodically detected above the 10 µg/L cleanup goal at AOCs 32 and 43A wells since monitoring began in 2006 (Table 5-2). The current arsenic concentration in well 32M-01-14XOB (29 µg/L) is greater than the cleanup goal, but is well below the historical high of 90 µg/L in 2015. Based on 2019 Mann-Kendall statistical analysis showing $p=0.124$, there is no statistically significant trend in the arsenic concentration data for 32M-01-14XOB. Arsenic at source well 32M-01-18XBR (3.4 µg/L) was below the cleanup goal in 2019; no statistically significant trend ($p=0.374$) was identified in the long-term dataset.

Manganese concentrations have remained below the cleanup goal (background level) since 2012, with the exception of an elevated level of manganese (8,400 µg/L) detected at source area well 32M-01-18XBR during 2018 (Table 5-2). This was followed by a decrease in the 2019 sample to a concentration (2,200 J µg/L) less than the cleanup goal.

5.4.4 Water Quality Parameters

General water quality chemistry parameters (pH, temperature, specific conductivity, ORP, DO, and turbidity) were measured at each of the four wells during the 2019 LTM event. These parameters were measured concurrently with low-flow sampling and were used to verify groundwater stabilization within each well prior to sampling. The field readings for water quality parameters at AOC 32/43A during the 2019 LTM event are summarized in Table 5-1. The ORP and DO data indicate that groundwater at AOC 32/43A is returning to an oxidizing condition with the exception of the area at downgradient well 32M-01-14XOB where ORP and DO values are within the reducing range. A comparison of the 2010 through 2019 field results

for ORP indicates that aquifer conditions at source well 32M-01-18XBR have reverted to an oxidizing environment (Table 5-3), with arsenic and manganese below the cleanup goals.

5.5 DATA EVALUATION FOR 2019 LONG-TERM MONITORING EVENTS

Groundwater samples were collected from four AOCs 32 and 43A wells in 2019. Samples were analyzed at Eurofins/TA for VOCs and total metals and submitted to Katahdin for VPH analysis. Sample analytical results are presented in Table 5-1.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, LCS/LCSD recoveries, and MS/MSD recoveries), the total metals results were acceptable as reported and may be used without qualification. Surrogate recoveries for the VPH analysis were outside acceptance limits; VPH results were qualified as estimated (UJ/J) in samples 32M-01-17XBR and 32M-01-18XBR. VPH results for the remaining samples were acceptable as reported. The samples submitted for VOC analysis were analyzed outside the 14-day holding time due to laboratory instrument failure and sample dilutions; the VOC results in these samples are potentially biased low. In addition, there were CCV, LCS and surrogate recovery, and field duplicate outliers for non-target VOCs. The VOC results for all samples were qualified as estimated (UJ/J).

5.6 LAND-USE CONTROLS

Ozark Automotive Distributers, Inc. (a division of O'Reilly Automotive, Inc.) currently operates the property at AOCs 32/43A. LUCs were established to limit the potential exposure to the contaminated soil and groundwater under both the existing and future site conditions, per the 1998 ROD, and was incorporated into the deed upon transfer to MassDevelopment. The LUCs were included in the deed when O'Reilly Automotive purchased the property. The LUCs ensure that exposure to any remaining contaminated soils beneath the site is controlled and the extraction of groundwater from the site for industrial or potable water supply is not permitted. LUCs are verified during annual sampling events. Existing land-use is evaluated as part of the Five-Year Review process to ensure control requirements are being met. A site-specific annual LUC checklist, including physical on-site inspection and interview components, was developed in 2007 for use during LUC verification activities. The checklist is presented in Appendix E.

5.6.1 Land-Use Control Interviews

An interview was conducted on January 21, 2020 with Mr. Roy Herzig (MassDevelopment), Mr. Neil Angus (Devens Enterprise Commission), and Mr. Jason Pahl (O'Reilly Automotive) responded via email regarding the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls;
- Excavations (planned or emergency) that may involve soils and groundwater; and
- Proposed plans for property sale, future redevelopment, and construction or demolition activities at the site.

Mr. Herzig, Mr. Angus, and Mr. Pahl confirmed that the building remains owned and operated by O'Reilly Automotive. Mr. Pahl confirmed that there have been no changes at the facility and no ground disturbance at the site during 2019.

5.6.2 Land-Use Control On-Site Inspection

LUCs were visually verified during the annual groundwater sampling event and the annual in-depth LUC inspection performed in December 2019 to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants;
- Any evidence that groundwater extraction wells had been installed at the site; and
- Any evidence of site use changes.

MassDevelopment supplies potable water to the large warehouse that currently occupies the property. No evidence of increased exposure potential was observed during the 2019 annual LUC inspection.

5.7 CONCLUSIONS

At source area well 32M-01-18XBR, the concentrations of 1,4-DCB, chlorobenzene, and VPH C_9-C_{10} exceeded their respective cleanup goals or monitoring criteria in 2019. At bedrock wells 32M-01-15XBR and 32M-01-16XBR, sampled in October 2019 at the request of USEPA, all target analytes (VOC, VPH carbon fractions, and VPH target analytes [BTEX]) were non-detect.

For the remaining wells sampled during the 2019 LTM event, only arsenic (29 µg/L) at downgradient well 32M-01-14XOB exceeded the cleanup goal (Table 5-1). There were no other exceedances of cleanup goals/monitoring criteria during the 2019 sampling event.

The ROD remedy includes LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. No evidence of increased exposure potential was observed during the 2019 annual LUC inspection. The Army will continue to perform LTM and LUC inspections until site conditions warrant discontinuation of sampling and change in LUC implementation.

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6.0 DEVENS CONSOLIDATION LANDFILL (DCL)

6.1 SITE BACKGROUND

The DCL was constructed on the former Fort Devens golf course driving range to accommodate excavated material from seven remedial areas consisting of two SAs, four AOCs, and one pesticide removal project at three Devens Housing Areas (HAs). The DCL and the contributor sites are shown on Figure 6-1. The seven DCL contributor sites were:

1. SA 12: A 0.5-acre location where construction debris and yard waste were deposited (approximately 8,700 cubic yards);
2. SA 13: A 1-acre area used from 1965 to the mid-1990s for yard-waste (approximately 10,000 cubic yards);
3. AOC 9: An area used for storing wood, concrete, asphalt, metal, brick, glass, and tree stumps (approximately 121,000 cubic yards);
4. AOC 11: A former landfill used from 1975 to 1980 for disposal of wood-frame hospital demolition debris (approximately 35,000 cubic yards);
5. AOC 40: 4 acres used for construction debris, ash, stumps, and logs (approximately 125,400 cubic yards);
6. AOC 41: A 0.25-acre landfill in the South Post Impact Area that was used up to the 1950s for disposal of non-explosive material and household debris (approximately 1,500 cubic yards); and,
7. HAs Grant, Locust, and Cavite: Soils and walling material contaminated with VOCs or pesticides (approximately 2,290 tons of soil and approximately 1,240 tons of concrete).

The ROD included provisions for either on-site or off-site disposal options. The on-site landfill construction alternative was selected as the preferred alternative. Construction of the DCL commenced in September 2000 and was completed in November 2002. *The Remedial Action Closure Report* prepared by Shaw Environmental (formerly Stone & Webster, Inc.) in September 2003 was accepted, certifying that the DCL was constructed and capped in accordance with the ROD, and was meeting the performance standards and/or response objectives in the ROD. The ROD required the collection of samples from groundwater monitoring wells in accordance with 310 CMR 19-132 to assess the effectiveness of the remedy. LTM activities have been performed since the completion of the landfill construction.

The Closure Report provides the operations and maintenance manual for the DCL (Shaw Environmental, Inc., 2003). In 2019, USACE operated and inspected the landfill facility, and KGS conducted the groundwater and leachate discharge sampling in 2019. Landfill leachate is discharged to the Devens sewage system under an industrial wastewater discharge permit. Effluent criteria and reporting requirements are specified in the leachate discharge permit, which was last updated on 21 August 2006. MassDevelopment established new effluent criteria beginning in 2009.

In addition to the monitoring activities (Section 6.5), maintenance activities at the DCL during 2019 included the following:

- clearing of vegetation around the leachate pump station (19 July 2019) and from the riprap along the northern toe of the landfill (19-20 December 2019)
- landfill mowing (23 October 2019)

- leachate pump flow meter calibration (30 December 2019)
- landfill inspection (13 November 2019)
- backfilling of animal burrows (12 November 2019)
- monthly inspections of the leachate pump system
- removal of the deteriorated metal shed located by the leachate pump station (25 October 2019).

6.2 WELL INSPECTION

Wells inspected during the spring and fall 2019 LTM events were found to be in good condition. Table 6-1 provides well construction information for current LTM wells presently gauged or sampled at the DCL, including three overburden groundwater monitoring wells, four bedrock groundwater monitoring wells and three overburden gas monitoring wells.

6.3 GROUNDWATER HYDROLOGY

During both the spring and fall 2019 LTM events, water levels were collected from the following seven wells and piezometers at the DCL:

LFM-03-07	LFM-99-03B	LFM-99-06ARP
LFM-99-01B	LFM-99-05A	
LFM-99-02B	LFM-99-05B	

Measured water levels at the DCL during the spring and fall 2019 LTM events are presented in Table 1-1 and Table 1-2, respectively. The wells are screened in overburden and bedrock (Table 6-1); however, there are no data that indicate that there is an aquitard/aquiclude hydrogeologically separating the two zones. Groundwater flow patterns at the DCL show a northeasterly flow pattern for the spring and fall 2019 LTM events as indicated on Figure 6-2 and Figure 6-3, respectively. Groundwater elevations were generally higher (approximately 2.21 to 7.67 feet higher) during the spring 2019 event relative to the fall 2019 LTM event; however, the overall groundwater flow pattern remained consistent between the two monitoring events. Groundwater gradients were calculated using elevation measurements recorded for the April and October 2019 LTM events. A gradient of 0.040 ft/ft was calculated (Gradient Line A-A', Figure 6-2) for the April event, and a gradient of 0.048 ft/ft was calculated (Gradient Line A-A', Figure 6-3) for the October event.

Analysis of the groundwater levels in monitoring wells located in the overburden (LFM-99-5A and LFM-99-6ARP) and Profiles 1 and 2 (Figure 6-4**)** indicate that the groundwater level in the overburden remained lower than the elevation of the landfill liner (i.e., the shallow groundwater table was not in contact with the landfill).

6.4 GROUNDWATER SAMPLING

Groundwater at the DCL is sampled semi-annually as part of the spring and fall LTM events. Wells sampled during the spring and fall 2019 LTM events consisted of LFM-99-02B, LFM-99-05A, LFM-99-06ARP, and LFM-03-07. These four wells are sampled during each LTM event.

Water level readings were collected from monitoring wells LFM-99-01B, LFM-99-03B, and LFM-99-05B during the spring and fall LTM events to evaluate if these wells should also be sampled during the LTM event. The depth to water for each of these wells was evaluated against shallow "trigger" depths listed in Table 6-2**.** If the depth to water was less than the "trigger"

depth (viz., higher water table elevation), there is a potential that groundwater may have come into contact with the landfill triggering the requirement to sample these locations along with the four LTM wells that are sampled during each event. The depth to water/groundwater elevations from the spring and fall 2019 LTM events compared to the trigger depths are summarized in Table 6-2**.** The water table remained below the trigger values during 2019 and no additional sampling was required. Analytical results for the spring and fall 2019 LTM wells are presented in Table 6-3 and Table 6-4**.**

6.5 LANDFILL GAS MONITORING

In 2016, a building was constructed at 85 Patton Road, Devens, Massachusetts, a location approximately 150 feet east of the southeastern edge of the landfill. MassDEP had requested that gas probes be installed between the landfill and the new structure and that landfill gas monitoring be conducted to evaluate whether landfill gas is migrating from the landfill through soil and/or in groundwater that could create hazardous condition in the area of the new structure.

The Army prepared the *Work Plan for Installation of Perimeter Landfill Gas Monitoring Wells* (KGS, 2018) and installed and sampled three gas probes on 7 December 2018 (Figure 6-1). Results of sampling of the three gas probes conducted on 11 November 2019 are presented in Table 6-5. Methane, the primary explosive landfill gas constituent of concern that could be generated from the DCL landfill, was not detected (0% LEL). VOC results ranged from 0.3 to 0.7 parts per million (ppm) and carbon dioxide ranged from 0.8 to 2.6%. Hydrogen sulfide and carbon monoxide were not detected. Therefore, no soil gas hazard for occupants of the adjacent building was identified.

6.6 LEACHATE SAMPLING

The DCL is permitted to discharge industrial wastewater to the Devens Sewerage System in accordance with Industrial Discharge Permit No. 017 granted by MassDevelopment. The permit legally binds the DCL effluent to meet the specified permit conditions. Penalties can be applied if the effluent discharge exceeds the conditions specified in the permit. Leachate monitoring was performed on a quarterly and semi-annual frequency until August 2006 when MassDevelopment approved a reduction in the leachate monitoring to an annual event. Sampling is performed each year between 1 October and 31 December, and self-monitoring reports are due to MassDevelopment by 5 January of the following year. Table 6-6 summarizes the DCL leachate analytical results from sampling on 23 October 2019. There were no exceedances of the effluent limits in 2019. Further details of the DCL leachate analytical results are presented in Section 6.9.3.

6.7 DEVENS CONSOLIDATION LANDFILL LEACHATE DISCHARGE QUANTITY MONITORING

DCL leachate discharge quantity monitoring was historically performed monthly by MassDevelopment. Operation and maintenance (O&M) of the leachate pumping station began in March 2008. Monitoring results are used to calculate leachate discharge quantities for comparison with historical discharge data. Leachate discharge quantities are summarized in Table 6-7. Leachate discharge quantities have decreased substantially since the landfill cap was completed. The decrease in leachate volume in 2019 compared to recent years is believed to be attributable to lower precipitation rates in 2019, specifically in the August to December period (Table 1-3).

6.8 LANDFILL INSPECTIONS

Since its completion, the DCL has been inspected annually to ensure it continues to be protective of human health and the environment. The inspection frequency was changed from semi-annual (spring and fall) to annual in 2008 based on recommendations in the USEPA- and MassDEP-approved LTMMP (HGL, 2008).

The DCL landfill was inspected on 11 November 2019, by KGS and USACE personnel. Observations were made regarding the vegetative cover, vegetation types, erosion, settlement, and general condition of the various features. The full report for the fall 2019 inspection is presented in Appendix F and the following list summarizes the findings of the fall inspection:

- The landfill cap is in good condition, with no apparent overall settlement or significant erosion. The cap vegetation appeared healthy and provides good coverage of the cap. Some of the original perennial grasses and clover are being replaced over large areas of the cap with invading weedy and some woody species. The woody vegetative growth gets cut low to the ground during each annual mowing and the remaining stalks do not appear to be impacting the grass cover or causing any erosion. Woody vegetation should continue to be mowed low and/or removed as feasible in order to prevent deep roots from penetrating the cap. Areas along the top of the cap, which were reseeded in 2018, continue to grow well. The cap and adjacent area vegetation were mowed during October 2019.
- The access roads, fencing, and security gate are in good condition.
- The access road from the entry gate around to the leachate pump station was in good condition. There were no ruts, potholes, or eroded areas.
- The perimeter fence is in good condition. The fence and entry gates, rock features (such as drainage swales and riprap), and the site's inherent relief help to minimize entry onto the site by motor vehicles. These access limitations appear to be adequate at the present time with no signs of vandalism or other unauthorized entry around the perimeter of the landfill.
- The cap drainage system was in good condition. Drainage channels were generally free of sediment and debris. The vegetation on the side slopes of the landfill was healthy and dense.
- The toe drain appeared to be functioning properly, and there were no visible signs of erosion or developing slope stability problems. Woody vegetation that was present in the riprap along the northern toe of the landfill was removed in December 2019. Toe drains should continue to be monitored for vegetation, which should be removed periodically to extent feasible.
- Landfill gas was monitored as part of the annual event. The gas vent system is in good condition.
- Landfill gas vent monitoring results (Appendix F) and gas probe monitoring results (Table 6-5) were acceptable.

Routine maintenance activities that should continue to be performed include annual mowing and control of encroaching vegetation in the drainage system (see also Appendix F). The annual mowing of the cap should be done in early fall to avoid harming ground-nesting songbirds. Mowing should also include the adjacent open field and detention pond areas.

6.9 ANALYTICAL RESULTS

Groundwater analytical results for the spring and fall 2019 DCL LTM events are presented in Table 6-3 and Table 6-4, respectively, and are summarized below. The spring and fall LTM events consisted of collecting four groundwater monitoring well samples and one field duplicate sample. There were no exceedances of the monitoring program benchmark criteria.

The fall 2019 leachate sampling event consisted of a single landfill effluent leachate sample collected on 23 October 2019 to fulfill the requirements of MassDevelopment Industrial Wastewater Discharge Permit No. 017. The leachate monitoring results are presented in Table 6-6.

6.9.1 Spring 2019 LTM Data Summary

- EPH fractions and target PAH compounds were non-detect.
- VPH fractions and target VOC compounds (BTEX) were non-detect.
- Organochlorine pesticides were non-detect except for an estimated concentration (0.010 J µg/L) of p,p′-DDT at LFM-03-07, well below the monitoring criterion of 0.3 µg/L.
- Target total metals were either non-detect or detected below the respective monitoring criteria.
- Total cyanide results were either non-detect or detected below the monitoring criterion.
- Wet chemistry parameters TDS, chloride, sulfate, nitrate/nitrite, and total alkalinity were reported in groundwater. TDS concentrations ranged from 290 to 580 mg/L; chloride concentrations ranged from 98 mg/L to 250 mg/L; sulfate concentrations ranged from 20 to 28 mg/L; total alkalinity concentrations ranged from 65 to 100 mg/L; nitrate/nitrite concentrations ranged from 0.28 to 1.2 mg/L; and COD concentrations were non-detect for all wells.

6.9.2 Fall 2019 LTM Data Summary

- EPH fractions and target PAH compounds were non-detect.
- VPH fractions and target VOCs compounds were non-detect.
- Organochlorine pesticides were non-detect.
- Target total metals were either non-detect or detected below respective monitoring criteria.
- Total cyanide results either non-detect or below the monitoring criterion.
- PCBs were non-detect.
- Wet chemistry parameters TDS, chloride, sulfate, nitrate/nitrite, and total alkalinity were reported in groundwater. TDS concentrations ranged from 540 to 850 mg/L; chloride concentrations ranged from 220 to 420 mg/L; sulfate concentrations ranged from 19 to 26 mg/L; nitrate/nitrite concentrations ranged from 0.55 to 1.3 mg/L; total alkalinity concentrations ranged from 88 to 130 mg/L; and COD concentrations were non-detect for all wells, except for 9.8 J at LFM-99-06ARP.

6.9.3 2019 Leachate Analytical Data Summary

- TTO is defined as the sum of all detected VOCs, SVOCs, organochlorine pesticides, and PCBs. The TTO concentration sum for the 2019 DCL leachate sample was 0.016 J mg/L.

- Cyanide and phenols were non-detect.
- TPH was detected in the leachate sample at 2.6 mg/L.
- Target metal results per the Wastewater Discharge Permit No. 017 were non-detect, except for arsenic at 0.0015 J mg/L and nickel at 0.0031 J mg/L.
- Wet chemistry parameters indicated the leachate pH was 7.7, which is within the permit range of 5.5-9.5. TSS was reported at 12 mg/L, below the 400 mg/L limit established in MassDevelopment Industrial Wastewater Discharge Permit No. 017.

6.9.4 DCL Data Trends

Historical analytical results for the DCL wells are summarized in Table 6-8, Table 6-9, and Table 6-10. Groundwater samples from wells LFM-99-02B, LFM-99-05A, and LFM-03-07 have remained at trace or non-detect levels for EPH and organochlorine pesticides since monitoring began in 2003. Similarly, metals concentrations have been consistently non-detect or below the respective cleanup goals in groundwater at these three DCL monitoring wells since November 2003. The 2019 wet chemistry parameters also remained generally consistent with past data.

6.9.5 Water Quality Parameters

General water quality chemistry parameters (pH, temperature, specific conductivity, ORP, DO, and turbidity) were measured during the 2019 LTM events. These parameters are measured concurrently with low-flow sampling and are used to determine groundwater stabilization within each well prior to sampling.

The final field readings taken prior to collection of each groundwater sample are reported in Table 6-3 and Table 6-4. Any COC detection at the DCL wells is sporadic and low in concentration; therefore, no definitive correlation can be established between the measured groundwater quality parameters and the presence or absence of contamination in the sampled wells.

6.10 DATA EVALUATION FOR 2019 LONG-TERM MONITORING EVENTS

6.10.1 Spring 2019 Groundwater Analytical Data Review

Groundwater samples were collected from four DCL wells in April 2019. The samples were analyzed at Eurofins/TA for organochlorine pesticides, total metals, cyanide, and wet chemistry parameters (TDS, alkalinity, chloride, sulfate, nitrite/nitrate, and COD). The samples were submitted to Katahdin for VPH and EPH analyses. Sample analytical data are presented in Table 6-3.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, surrogate recoveries, LCS/LCSD recoveries, and MS/MSD recoveries), the EPH, TDS, alkalinity, sulfate, nitrate/nitrite, cyanide, and COD results were acceptable as reported. Surrogate recoveries for the VPH analysis were outside acceptance limits in two samples; VPH results were qualified as estimated (UJ/J) in samples LFM-03-07 and LFM-DUP01 The pesticide results for all samples were qualified as estimated (UJ/J) because of surrogate and/or LCS percent recovery outliers. The total iron results in samples LFM-99-05A and the field duplicate LFM-DUP01 were qualified as estimated (J) because of a FD relative percent difference (RPD) outlier. The chloride result for sample LFM-99-02B was qualified as estimated (J) because of an MS recovery outlier.

6.10.2 Fall 2019 Groundwater Analytical Data Review

Groundwater samples were collected from three wells in October 2019. Samples were analyzed at Eurofins/TA for organochlorine pesticides/PCBs, total metals, cyanide, and wet chemistry parameters (TDS, alkalinity, chloride, sulfate, nitrite/nitrate, and COD). Samples were submitted to Katahdin for VPH and EPH analyses. Sample analytical data are presented in Table 6-4.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, surrogate recoveries, LCS/LCSD recoveries, and MS/MSD recoveries), VPH, EPH, pesticides/PCBs, TDS, alkalinity, chloride, sulfate, nitrate/nitrite, and cyanide results were acceptable as reported. The non-detect result for COD in sample LFM-99-02B was qualified as estimated (UJ) because of an MS percent recovery outlier.

6.10.3 2019 Leachate Analytical Data Review

The DCL leachate sample was collected in October 2019. The leachate sample was submitted to Eurofins/TA for total metals, cyanide, TPH (diesel range organic [DRO]), total phenol, pesticides/PCBs, and wet chemistry parameters. Samples were submitted to Katahdin for VOC and SVOC analyses. The data were found to be usable as reported and may be used for its intended purpose. Sample analytical data are presented in Table 6-6.

Based on the data evaluation elements reviewed (including holding times, blank sample results, field duplicate results, surrogate recoveries, LCS/LCSD recoveries, and MS/MSD recoveries), the data are acceptable and may be used without qualification with one exception. The non-detect results for PCBs from the leachate sample were qualified as estimated (UJ) because of low surrogate recoveries

6.11 LAND-USE CONTROLS

MassDevelopment maintains ownership of the DCL property and agreed to grant the Army a permanent easement in 2001 to build and operate the landfill (Easement Agreement, 2001). DCL contributor sites AOC 9, AOC 40, and SA 13 were transferred from the Army to MassDevelopment in March 2006. The March 2006 deed included use restrictions on the contributor sites to prevent residential development of the properties (Deed, 2006).

The 1999 ROD had indicated LUCs "were planned for the proposed Consolidation Landfill." LUC inspections are conducted per the "LUC Monitoring Plan" included in the 2008 LTMMP. A site-specific annual LUC checklist, including physical on-site inspection and interview components, was developed in 2007 for use during LUC verification activities. The LUC checklists for DCL and the DCL contributor sites are included in Appendix E.

6.11.1 Land-Use Control Interview

An interview was conducted on January 21, 2020 with Mr. Roy Herzig, Mr. Ron Ostrowski, and Mr. Robert Carley (MassDevelopment), and Mr. Neil Angus (Devens Enterprise Commission) regarding the following items:

- Familiarity with the LUCs imposed upon the property and documentation of these controls;
- Excavations (planned or emergency) that may involve soils and groundwater; and
- Proposed plans for property sale, future redevelopment, and construction or demolition activities at the site.

Repaving of the driveway apron**,** installation of trees, and loam application/reseeding were conducted at a construction staging area supporting a DPW contractor. Repairs to the DCL entrance gate and fencing were completed. No other changes at the DCL site in 2019 were identified.

6.11.2 Land-Use Control On-Site Inspection

LUCs at the DCL were visually verified during annual groundwater and landfill leachate sampling events and the annual in-depth LUC inspection performed in December 2019 to identify the following:

- Any signs of increased exposure potential to the public from soil and/or surface water contaminants;
- Any evidence that groundwater extraction wells had been installed at the site; and
- Any evidence of site use changes.

No groundwater extraction wells have been installed on the site. No additional site development, evidence of damage, or signs of increased exposure potential were identified.

In addition to the on-site DCL inspection, a LUC inspection of the DCL contributor sites (AOC 9, AOC 40, and SA 13) was performed. The findings of the contributor site inspections (Appendix E) revealed no abnormalities or changes in land-use at the individual contributor sites, and there was no evidence of residential development.

6.12 CONCLUSIONS

The 2019 results for the DCL groundwater monitoring wells remained consistent with groundwater results from previous LTM events. EPH and organochlorine pesticide results have been non-detect or detected below the associated analytical reporting limits since 2004. Metals results have been below monitoring criteria in the DCL monitoring wells groundwater samples since 2003 and the 2019 results were consistent with the historical results. The 2019 wet chemistry parameters were generally consistent with previous results. There were no exceedances of the DCL Wastewater Discharge Permit No. 017 in the October 2019 sampling of the DCL leachate.

Only low levels of methane were detected (0 to 0.1%) and LEL was non-detect (0%) (see Appendix F). Other soil gas constituents were either detected at normal concentrations (oxygen) or trace levels that do not present a hazard to the new building (VOC, CO_2). No soil gas hazard for occupants of the new building was identified.

The ROD remedy includes LUCs to limit potential exposure to contaminated soil and groundwater under both existing and future site use. During the 2019 LUC inspection, there was no evidence of increased exposure potential or changes in land use at DCL or at the DCL contributor sites (AOC 9, AOC 40, and SA 13). Per the requirements of the 2006 transfer deed, these contributor sites are not being used, or under development, for residential purposes**.** The Army will continue to perform LTM and LUC inspections until site conditions warrant discontinuation of sampling and change in LUC implementation.

7.0 HOUSING AREAS AND 37-MM IMPACT AREA

7.1 SITE BACKGROUND

The Grant HA, Oak HA, Maple HA, and 37-mm Impact Area are located within the Main Post, located between Hospital Road, El Carney Street, and the Nashua River. A map illustrating the location of the HAs and 37-mm Impact Area is presented on Figure 7-1. Historical records indicate that training was conducted within the then wooded HAs from 1917 until a multi-family housing development was constructed in the late 1950s. A 37-mm range was located along the western boundary of the Grant HA with an impact area, which occupies approximately 2 acres, on the northern slope of Oak Hill.

In 1994/1995, USACE completed a study to document the locations of all the training areas and ranges at Devens. Based on the findings of this study, the Archive Search Report, several former weapons training ranges within the former installation were identified. Several potential munitions and explosives of concern (MEC) sites were identified. Grant HA, along with portions of the Oak and Maple Housing Areas, were designated as Area 11. A 1995 munitions response investigation confirmed the presence of MEC throughout Area 11 with a clustering of MEC located at the southern end of Area 11, north of the former Oak Housing Area (USACE, 1995). In 1996, MEC removal actions were performed at the 37-mm Impact Area and extending into the former Oak and Maple HAs. Over fifty unexploded 37-mm projectiles and many 37-mm fragments were located and disposed. Most of the ordnance that was discovered was found in the two dense clusters indicating former target locations. This removal action was summarized in the Final Removal Action Report (Human Factors Applications, Inc., 1996).

Following the removal action in 1996, concerns regarding the potential for remnant unexploded ordnance (UXO) to exist in the soil within the 37-mm Impact Area and the potential for similar conditions at the Grant HA resulted in MassDevelopment contracting Ordnance and Explosive Remediation, Inc. (OER) to conduct a survey of the area. Digital geophysical surveying was completed to evaluate whether MEC existed. The 1996 MEC investigation by USACE and the 2004/2005 MEC survey and removal action by OER removed all identified UXO located within 18 inches of the surface over the Grant HA and portions of the surrounding HAs. The OER removal action found and destroyed 31 UXO (20 37-mm practice round projectiles, four mines, one rifle grenade, and six stokes mortars), and 17 other ordnance items. Most of the UXO were found within an estimated 2-acre area associated with the target Impact Areas and the north slope of Oak Hill. This area is located on the southwest edge of the Grant HA. The survey and removal action results were presented in the *Site Specific Final Report, Digital Geophysical Mapping (DGM) & Unexploded Ordnance (UXO) Removal, Grant Housing Area, Former Ft. Devens, Harvard, Worcester, Massachusetts* (OER, 2006).

Based on the findings of the previous investigations and removal actions, an Expanded Conceptual Site Model (ECSM) (USACE, 2006) was developed for the former Grant HA that extended to portions of the Oak and Maple Housing Areas. The report identified three ranges within the Grant HA and adjacent Oak HA. LUCs were identified by the report as the preferred response action to address the former ranges within the Grant Housing Area.

In addition to the UXO removal, the Army conducted a pesticide removal action in 2002. It was determined that in the late 1950s and early 1960s, the Army had applied pesticides around the housing units for a means of pest control. The removal action resulted in the excavation and disposal of more than 150,000 tons of soil and concrete from the Grant HA. The excavated soil

and concrete were hauled and placed in the DCL landfill. The Army also conducted a PCB Time Critical Removal Action from 2002 to 2005 within the Grant HA. Approximately 12,000 tons of soil were excavated and disposed. MEC were not encountered during either of the removal actions.

These efforts were documented in the Preliminary Assessment/Site Inspection and Supplemental Site Investigation Comprehensive Report (PASI/SSI Report). The PASI/SSI also provided a detailed summary of land-use, habitat survey, and sampling efforts, which concluded that the Grant HA did not pose unacceptable hazards to ecological receptors. However, the PASI/SSI Report recommended a Focused Feasibility Study (FFS) be prepared to evaluate the alternatives involving LUCs for the Impact Area (Weston, 2008b).

The Army then performed an FFS comparing the remedial alternatives addressing potential residual UXO at the Grant HA and the 37-mm Impact Area. The FFS evaluated potential remedial alternatives and was completed in 2008 (Weston, 2008a). Along with the FFS, a Proposed Plan was created in accordance with section 117 CERCLA, which gave the public the opportunity to participate in the remedial action.

A ROD for the Grant HA and Impact Area was signed in 2009. The Remedial Action Objective (RAO) for the Grant HA and 37-mm Impact Area is to prevent direct contact with UXO, which may remain in the soils at the site. As noted in the ROD, the LUCs are "preventative for direct contact as they educate the contractor and resident as to the potential presence of UXO and the actions to be taken if presumed UXO is encountered, which included not handling the UXO" (Weston, 2009).

Pursuant to the ROD, a Land-Use Control Implementation Plan (LUCIP) was issued in May 2011 (U.S. Army BRAC Environmental Division, Army Garrison Fort Devens, 2011). LUCs for Grant HA are addressed through affirmative actions which include:

(1) public education to property owners, residents, as well as any construction and/or utility contractors via utility bill inserts, educational materials posted on a community website, and training for contractors conducting ground intrusive activities on the property; and
(2) a deed notice that will be inserted into any Grant HA deeds by MassDevelopment to convey there is no evidence of additional UXO present at the site, but that the possibility does remain that UXO could be discovered in the future.

Additionally, the LUCIP indicates that LUCs for the Impact Area are addressed through institutional controls, access restrictions, affirmative measures, and prohibitive directives including:

(1) institutional controls (IC) to be implemented through a Grant of Environmental Restrictions and Easements;
(2) access controls would be implemented using signage and fencing to restrict public access;
(3) public education to property owners, residents, as well as any construction and/or utility contractors conducting ground intrusive activities on the property;
(4) prohibitive directives to include restrictions on all ground intrusive activities; and
(5) annual site inspections to evaluate the access controls, monitor the potential presence of surficial UXO, and evaluate the overall effectiveness of the LUCs.

The Army conducts annual reviews to confirm the overall effectiveness and compliance with the established LUCs in the Grant HA and the Impact Area. The reviews include interviews with personnel of MassDevelopment and Devens Enterprise Commission (or successor municipal authority) as to the discovery, reporting, and disposal of UXO in the Grant HA and the Impact Area during the prior year. The annual review includes a physical inspection at the Impact Area to evaluate access controls and monitoring for the presence of surface and near surface UXO. The reviews include interviews with MassDevelopment (or the then current owner of the Impact Area) to determine if any utility repair or emergency work was conducted in the Impact Area during the prior year. The annual review of the LUCs at Grant HA includes verification that the website, utility bill inserts, UXO awareness training, inclusion of the Supplemental Deed Notice in deeds conveying the Grant HA (or portions thereof) and other requirements set forth in this LUCIP are being properly implemented. If deemed necessary, the annual review of the LUCs at the Grant HA may also include a physical inspection.

A MEC RI was conducted at former Oak and Maple Housing Areas in 2010/2011 based on recommendations in the PASI/SSI Report (Weston, 2008b). The investigation revealed that the probability of encountering MEC within the previously developed former Oak and Maple Housing Areas was considered to be extremely low (HGL, 2012). An FFS Addendum to the Grant HA and 37-mm Impact Area FFS was prepared to address the former Oak and Maple Housing Areas (Sovereign/HGL, 2013). The FFS Addendum recommended LUCs for the former Oak and Maple HAs. The RAO for the former Oak and Maple HAs was the same as the Grant HA and 37-mm Impact Area (prevent direct contact with UXO/MEC, which may remain in soils) (Weston, 2009). The remedy for the former Oak and Maple HAs was incorporated within the Grant HA and 37-mm Impact Area site via an Explanation of Significant Differences (Sovereign/HGL, 2014). The additions to the ROD selected remedy, for application to the Oak and Maple Housing Areas, consist of inclusion of:

(1) pre-construction clearance of selected grids at the Oak Housing Area;
(2) a MEC physical preview of any proposed construction footprint;
(3) future MEC construction support for all intrusive activities in areas where construction support has not previously been conducted;
(4) the inclusion of a deed notice for the prohibition of residential reuse within the LUCs; and
(5) LUC affirmative measures for public education.

The application of LUCs was specified by the *Land Use Control Implementation Plan Addendum, Former Oak and Maple Housing Areas, Former Fort Devens Army Installation, Devens, MA* (USACE, 2017).

The pre-construction clearance of selected grids at the Oak Housing Area was conducted in 2016 and the housing area foundation slabs were removed (USACE, 2017).

The Grant HA is currently zoned for residential reuse per the Devens Reuse Plan. MassDevelopment executed and properly recorded a Grant of Environmental Restrictions and Easements for the Grant HA, which was recorded at the Worcester Registry of Deeds on December 19, 2011, book 48291, page 138. The Oak and Maple HA is zoned for commercial construction and the Impact area is restricted for future reuse.

7.2 LAND-USE CONTROLS

Ownership of Grant, Oak, and Maple HAs and 37-mm Impact Area was transferred from the Army to MassDevelopment in 1996 and 1999. LUCs were implemented to ensure that public education to property owners, residents, as well as any construction and/or utility contractors conducting ground intrusive activities on the property was completed through distribution of education materials and development of a web-based visual and audio media. Another LUC details that a deed notice will be inserted by MassDevelopment into any Grant, Oak, and Maple HAs and 37-mm Impact Area deeds. These notices convey that there is no evidence of additional UXO present at the site, but UXO could be discovered in the future. A site-specific annual LUC checklist for the Grant HA and Impact Area, including physical on-site inspection (if deemed necessary) and interview components, were developed in 2011 for use during LUC verification activities. The completed checklists for the 2019 LUC inspections are presented in Appendix E and are summarized below.

7.2.1 Land-Use Control Interviews

An interview was conducted with Mr. Roy Herzig and Mr. Timothy Kelly (MassDevelopment), and Mr. Neil Angus (Devens Enterprise Commission) on 21 January 2020 to discuss compliance with the LUCs at Grant, Oak, and Maple HAs. The following items were evaluated:

- Any reports during the reporting year of any objects discovered on the site, including any findings of UXO;
- Verify the existence of an educational website for the public;
- Verify the inclusion of required utility bill inserts;
- Verify the posting of utility bill insert in a conspicuous location;
- Verify distribution of current soils management policy to construction;
- Verify that awareness training is being conducted (if construction activities occurred during the reporting year); and
- Verify that supplemental deed notice has been included in deeds conveying portion of the Grant HA.

Interview notes for the Grant, Oak, and Maple HAs are presented in Appendix E. The LUC requirements are being met. There were no objects discovered on the site during 2019, including any findings of UXO. Proper signage remains in-place and all contractors are required to attend pre-construction meetings where UXO awareness information is presented. Copies of the Soils Management Plan and UXO information are available on the Devens Enterprise Commission website, www.devensec.com. Within the Grant HA, Phase II construction of 17 condominium homes was underway during the 2019 reporting period. Supplemental deed notices have been provided to all construction contractors in accordance with the LUC provisions. Copies of the deed notice and utility bill insert are provided in Appendix E. In addition, all contractors are provided with copies of the Devens Soil Management Policy and are required to implement all requirements within the documents.

7.2.2 Land-Use Control On Site Inspection

LUCs were verified during the Impact Area property site visit. A LUC inspection was performed to identify the following:

- Land-use conditions (fencing, signage, and vegetation);

- Any areas of UXO concern, performed by sweeping 10% of the site with a metal detector; and
- Any evidence of site use changes.

A visual inspection and UXO screening was conducted on 13 October 2019. The fence around the Impact Area was inspected for damage and a metal detector was used to sweep the ground. No damage to the fence was noted. The area was searched using a sweeping back and forth motion with the metal detector. At the time of the 2019 inspection, no UXO was found in exposed surface soils. It was noted that a large section of trees immediately inside the main entrance prevents the gate from swinging inward. Overall, the findings of the site inspection revealed no abnormalities within the fenced, 37-mm Impact Area.

7.3 CONCLUSIONS

The RAO for the HAs and 37-mm Impact Area is to prevent direct contact with UXO that may remain in the soils at the site. The selected Remedial Action included LUCs in order to provide overall protectiveness of public health and welfare or the environment. During the 2019 review period, the former Grant, Oak, and Maple Housing Areas, and the 37-mm Impact Area were subject to annual LUC interviews, on-site inspections, as well as other affirmative measures and prohibitive directives (e.g., distribution of educational materials, providing awareness courses for site workers and residents, implementing deed notices, and maintaining signage). An additional LUC provision states that upon future transfer of the property from MassDevelopment, a deed notice will be provided to the new owners detailing the property's history. This notice will convey additional information on UXO investigations and removal actions conducted at HAs and 37-mm Impact Area, and include the conclusion of the ROD that the property with LUCs in place is suitable for the proposed future use and that there is no evidence of additional UXO present at the site, but that the possibility does remain that UXO could be discovered in the future.

The Grant Housing and 37-mm Impact Area LUCIP was issued in May 2011 and the draft final LUCIP Addendum for the Oak and Maple Housing Areas is under review by EPA and MassDEP. Although implementation of the LUCs, required per the 2014 Explanation of Significant Differences for the former Oak and Maple Housing Areas, has yet to be memorialized in a final LUCIP, the specific actions undertaken by Army to ensure protectiveness of human health and the environment in the short-term are described herein.

The site-specific annual LUC checklist, including physical on-site inspection and interview components, was utilized during this reporting year, and interviews with knowledgeable personnel confirmed the overall effectiveness and compliance with the established LUCs. Results of the annual compliance monitoring indicate that no deviations or deficiencies to the LUCs were evident and corrective action(s) were not necessary.

Compliance with the LUCs was verified through the physical on-site inspection and interviews. Specifically, the following was verified:

- Phase II construction of condominium homes was noted in the 2019 reporting period
- Supplemental deed notices were provided to all construction contractors.
- The electric utility will distribute education inserts to new residents.
- Education information is displayed on a community website.
- Fencing and signage have been maintained to limit public access to restricted areas.

The LUCs have been effective in preventing direct contact with UXO/MEC.

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FIGURES

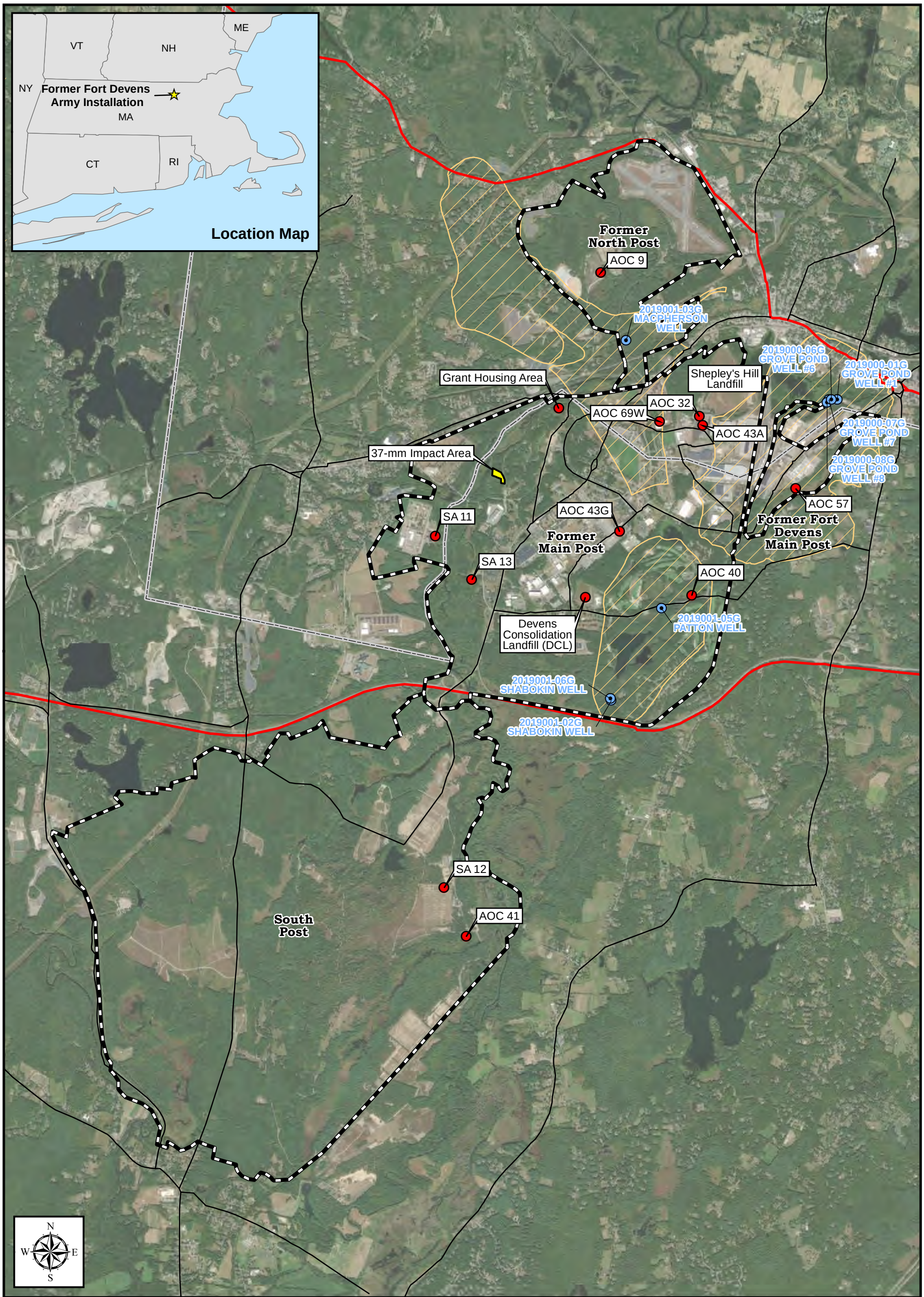

Figure 1-1
Site Location
Former Fort Devens Army Installation

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Area of Contamination (AOC)
- Water Supply Well
- Highway
- Major Road
- County Line
- MassDEP Zone II Wellhead Protection Area
- Former Fort Devens Boundary

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Former Fort Devens Army Installation

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 1,750 3,500
Feet

Date: 10/19/2020

Figure 1-1

File: AR2019_MP_F1-1_Site.mxd

Figure 2-1
Site Layout
Area of Contamination 57
Area 1, 2 & 3



Legend

- Irrigation Well (Approximate Location)
- Approximate Area of Debris Pile
- Area of Contamination (AOC)
- Stream
- Surface Water Flow Direction
- Topographic Contour (Ft AMSL)
- Former Fort Devens Boundary

Note:
AOC 57 lies within the MassDEP Zone II Wellhead Protection Area.

Aerial Sources: 2019, USGS, MassGIS

2019 Main Post Annual Report
AOC 57 - Area 1, 2 & 3

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 125 250
Feet

Date: 10/19/2020

Figure 2-1

File: AR2019_MP_F2-1_AOC57.mxd

Figure 2-2
Site Layout
Area of Contamination 57 - Area 2



Legend

- LTM Well - Gauge Only
- Staff Gauge
- Surface Water Sample Location
- 57M-03-06X — Well/Piezometer/Sample Location Identification
- Final Excavation Limit (2003)
- Conti Excavation Limit (2002)
- Former Fort Devens Boundary
- Flagged Wetland Limits
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Containment Dam
- Area of Contamination (AOC)
- Stream
- Surface Water Flow Direction

Note:
AOC 57 lies within the MassDEP Zone II Wellhead Protection Area.

Aerial Sources: 2019, USGS, MassGIS

2019 Main Post Annual Report
AOC 57 - Area 2

Former Fort Devens Army Installation
Devens, Massachusetts

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0 30 60
Feet

Date: 10/19/2020

Figure 2-2

File: AR2019_MP_F2-2_AOC57-2.mxd

Figure 2-3
Site Layout
Area of Contamination 57 - Area 3



Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Well Point - Gauge Only
- LTM Piezometer
- Surface Water Sample Location
- Monitoring Well - Abandoned
- Monitoring Well - Destroyed
- 57M-95-03X — Well/Piezometer/Sample Location Identification
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area of Contamination (AOC)
- Alternate III-2a Estimated Soil Excavation Area
- Stream
- Topographic Contour (Ft
- Surface Water Flow Direction

Notes:
AOC 57 lies within the MassDEP Zone II Wellhead Protection Area.
Well 57M-96-09X buried by construction.
LTM = Long-term monitoring

Aerial Sources: 2019, USGS, MassGIS

2019 Main Post Annual Report
AOC 57 - Area 3

Former Fort Devens Army Installation
Devens, Massachusetts

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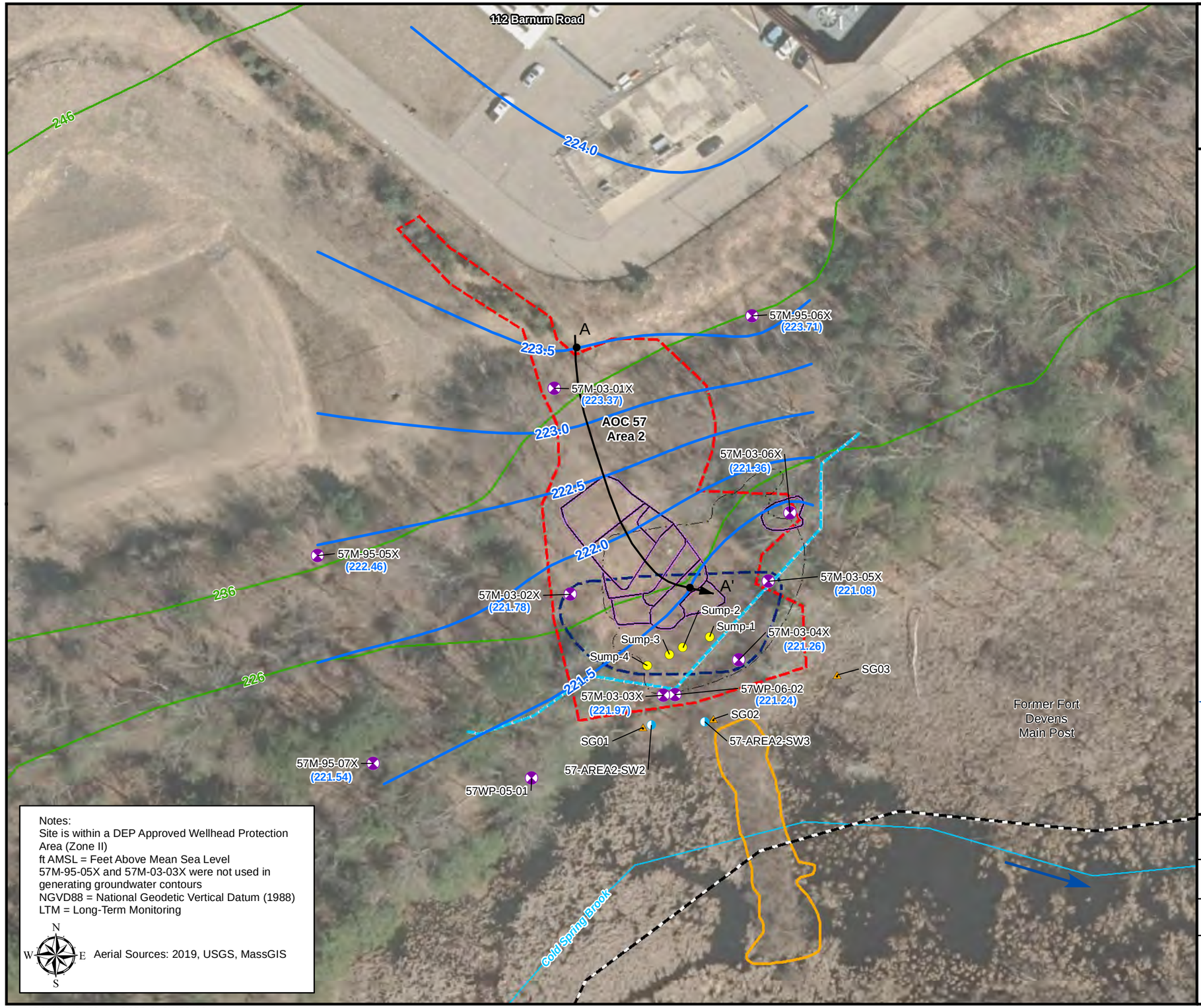
0 30 60
Feet

Date: 10/19/2020

Figure 2-3

File: AR2019_MP_F2-3_AOC57-3.mxd

Figure 2-4
Water Table Elevation
Area of Contamination 57 - Area 2
April 2019



Notes:
Site is within a DEP Approved Wellhead Protection Area (Zone II)
ft AMSL = Feet Above Mean Sea Level
57M-95-05X and 57M-03-03X were not used in generating groundwater contours
NGVD88 = National Geodetic Vertical Datum (1988)
LTM = Long-Term Monitoring

N W E S

Aerial Sources: 2019, USGS, MassGIS

Legend

- LTM Well - Gauge Only
- Staff Gauge
- Former Surface Water Sample Location
- Sump
- Groundwater Elevation Contour (ft NGVD88) (Contour Interval = 0.5 ft)
- (221.97) Groundwater Elevation (ft NGVD88)
- A—A' Groundwater Gradient Calculation Location
- 57M-03-06X Well/Piezometer/Sump/Sample Location Identification
- Final Excavation Limit (2003)
- Conti Excavation Limit (2002)
- Former Fort Devens Boundary
- Flagged Wetland Limits
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Containment Dam
- Area of Contamination (AOC)
- Stream
- Surface Water Flow Direction
- Topographic Contour (Ft AMSL)

2019 Main Post Annual Report
AOC 57 - Area 2

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 30 60
Feet

Date: 10/19/2020

Figure 2-4

File: AR2019_MP_F2-4_AOC57_2_GWC0419.mxd

Notes:
Site is within a DEP Approved Wellhead Protection Area (Zone II)
Well 57M-96-09X buried by construction.
ft AMSL = Feet Above Mean Sea Level
NGVD88 = National Geodetic Vertical Datum (1988)
LTM = Long-Term Monitoring

N
W E
S

Aerial Sources: 2019, USGS, MassGIS

Figure 2-5
Water Table Elevation
Area of Contamination 57 - Area 3
April 2019

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Well Point - Gauge Only
- LTM Piezometer
- Surface Water Sample Location
- Monitoring Well - Abandoned (2012)
- Monitoring Well - Destroyed
- Groundwater Elevation Contour (ft NGVD88) (Contour Interval = 1 ft)
- (222.54) Groundwater Elevation (ft NGVD88)
- A—A' Groundwater Gradient Calculation Location
- 57M-95-03X Well/Piezometer/Sample Location Identification
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area of Contamination (AOC)/ 1999 Excavation Area
- Alternate III-2a Estimated Soil Excavation Area (approximate location)
- Stream
- Topographic Contour (Ft AMSL)
- Surface Water Flow Direction

246
57M-96-09X
G3M-93-09X
AOC 57
Area 3
57M-95-03X
(224.23)
A
224
57M-96-10X
(222.54)
226
223
57M-96-12X
(222.76)
57WP-06-03
(221.04)
57M-96-11X
(220.84)
222
57M-96-13X
(222.77)
221
220
A'
57P-98-03X
(219.48)
57P-98-04X
(219.32)
57-AREA3-SW1
Gold Spring Brook

2019 Main Post Annual Report
AOC 57 - Area 3

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 30 60
Feet

Date: 10/19/2020

Figure 2-5

File: AR2019_MP_F2-5_AOC57_3_GWC0419.mxd

Figure 2-6
Metal Concentrations in Groundwater and Surface Water
Area of Contamination 57 - Area 3
April 2019

Notes:

GW Cleanup Goal	
Metals	Result (µg/L)
Arsenic	**10**
Iron	**NS**
Manganese	**NS**

SW Benchmark	
Metals	Result (µg/L)
Arsenic	***150***
Iron	***1,000***
Manganese	**NS**

Only exceedances of the groundwater cleanup goal and surface benchmark are posted on the figure
Bold, italicized, concentrations indicate detected parameter above Benchmark
Shaded and bold concentrations indicate detection above Cleanup Goal
µg/L = micrograms per liter
NS = No Standard
ft AMSL = feet above mean sea level
LTM = long term monitoring
AOC 57 lies within the MassDEP Zone II Wellhead Protection Area.

N W E S

Aerial Sources: 2019, USGS, MassGIS

AOC 57
Area 3

226

57M-95-03X	April 2019
Metals	Result (µg/L)
Arsenic, Total	**15**
Iron, Total	**5,600**
Manganese, Total	**160**

57M-95-03X

57M-96-10X

57M-96-12X

57WP-06-03

57M-96-11X	April 2019	April 2019 (Dup)
Metals	Result (µg/L)	Result (µg/L)
Arsenic, Total	**100**	**110**
Iron, Total	***36,000***	***38,000***
Manganese, Total	***3,000***	***3,100***

57M-96-11X

57M-96-13X

57P-98-03X

57P-98-04X

57-AREA3-SW1

57-AREA3-SW1	April 2019	April 2019 (Dup)
Metals	Result (µg/L)	Result (µg/L)
Arsenic, Dissolved	3.0 U	3.0 U
Iron, Dissolved	***760***	***600***
Manganese, Dissolved	**110**	**100**

Gold Spring Brook

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Well Point - Gauge Only
- LTM Piezometer
- Surface Water Sample Location
- 57M-95-03X — Well/Piezometer/Sample Location Identification
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area of Contamination (AOC)
- Alternate III-2a Estimated Soil Excavation Area
- Stream
- Surface Water Flow Direction
- Topographic Contour (Ft AMSL)

Note:

Aerial Sources: 2019, USGS, MassGIS

2019 Main Post Annual Report
AOC 57 - Area 3

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 30 60
Feet

Date: 10/19/2020

Figure 2-6

File: AR2019_MP_F2-6_AOC57_3_Metals_April2019.mxd

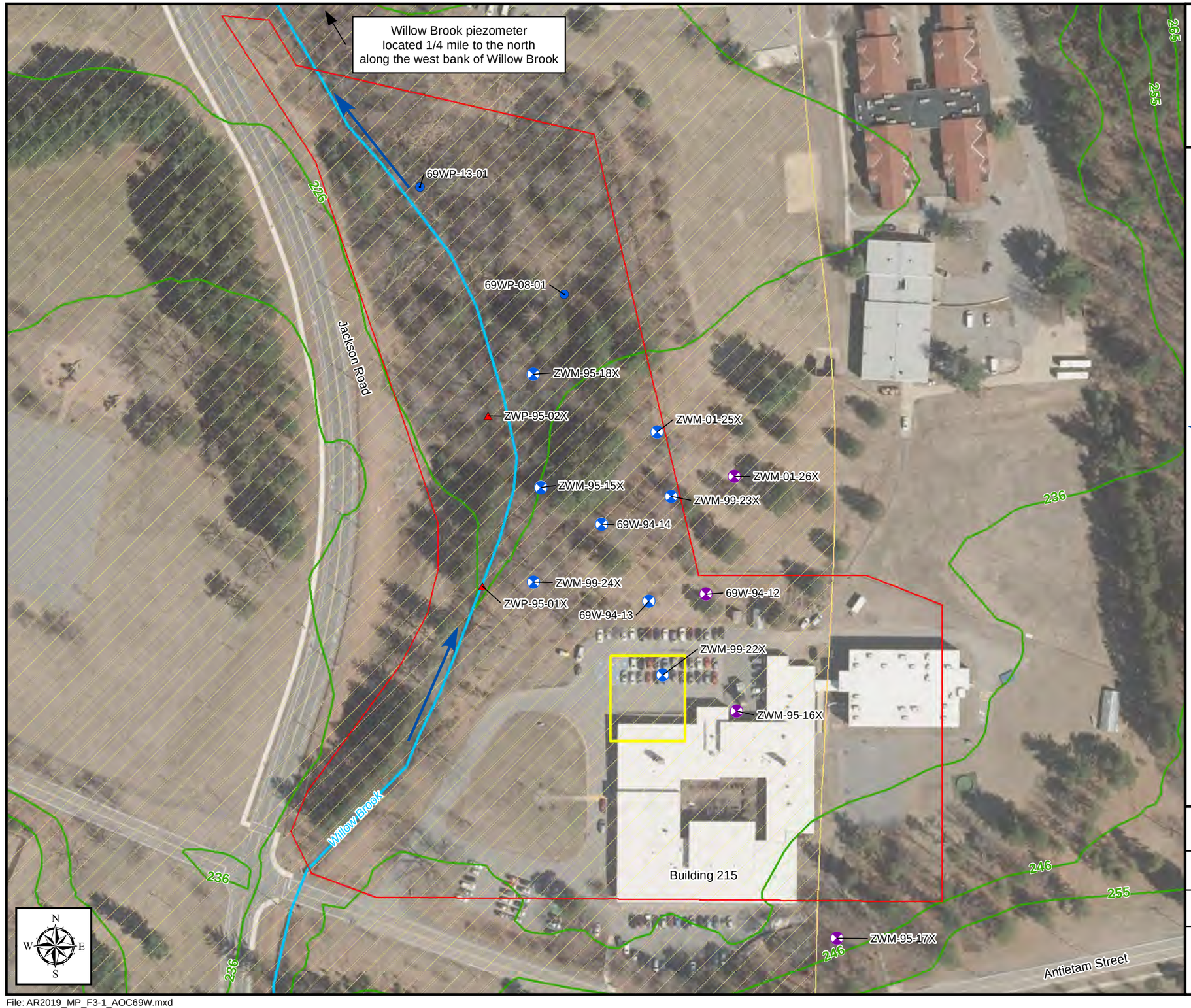


Figure 3-1
Site Layout
Area of Contamination 69W

Legend

- LTM Sample Well
- LTM Sample Well Point
- LTM Well - Gauge Only
- LTM Piezometer
- ZWM-01-26X — Well/Piezometer/Surface Water Elevation Location
- Parcel Boundary
- Surface Water Course
- Surface Water Flow Direction
- Excavated Soils Management Area
- Topographic Contour (Ft AMSL)
- MassDEP Zone II Wellhead Protection Area

Notes:
LTM = Long-term monitoring

Aerial Sources: 2019, USGS, MassGIS

2019 Main Post Annual Report
AOC 69W

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

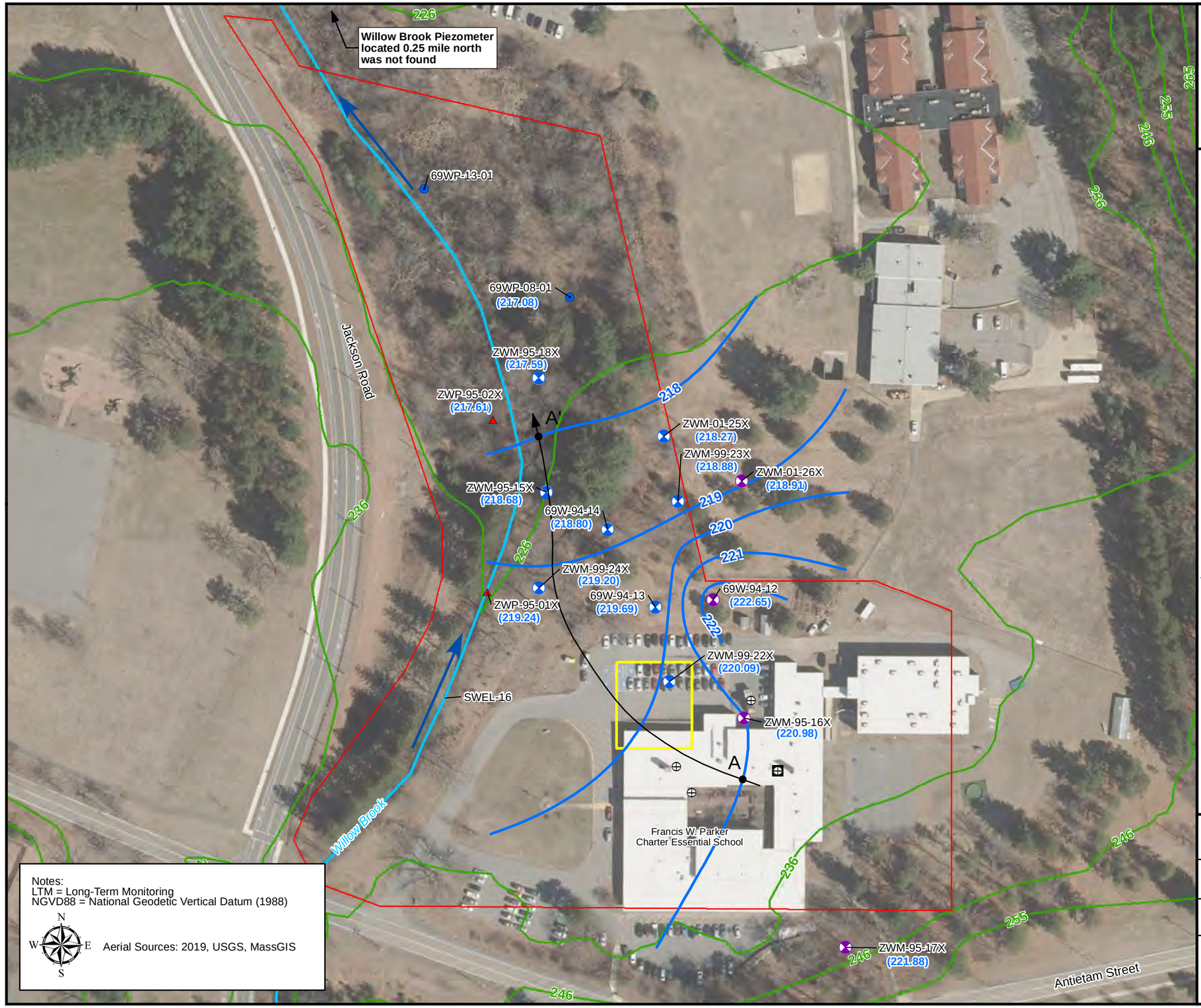
0 60 120
Feet

Date: 10/19/2020

Figure 3-1

File: AR2019_MP_F3-1_AOC69W.mxd

Figure 3-2
Water Table Elevation
Area of Contamination 69W
October 2019



Notes:
LTM = Long-Term Monitoring
NGVD88 = National Geodetic Vertical Datum (1988)

N W E S

Aerial Sources: 2019, USGS, MassGIS

Legend

- LTM Sample Well
- LTM Sample Well Point
- LTM Well - Gauge Only
- LTM Piezometer
- Monitoring Well - Abandoned (2012)
- Monitoring Well - Presumed Destroyed
- Groundwater Elevation Contour (ft NGVD88) (Contour Interval = 1 ft)
- (221.75) Groundwater Elevation (ft NGVD88)
- A—A' Groundwater Gradient Calculation Location
- ZWM-01-26X Well/Piezometer/Surface Water Elevation Location
- Parcel Boundary
- Surface Water Course
- Surface Water Flow Direction
- Excavated Soils Management Area
- Topographic Contour (ft AMSL)

AOC 69W lies within the MassDEP Zone II Wellhead Protection Area for the MacPherson well.

2019 Main Post Annual Report
AOC 69W

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Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

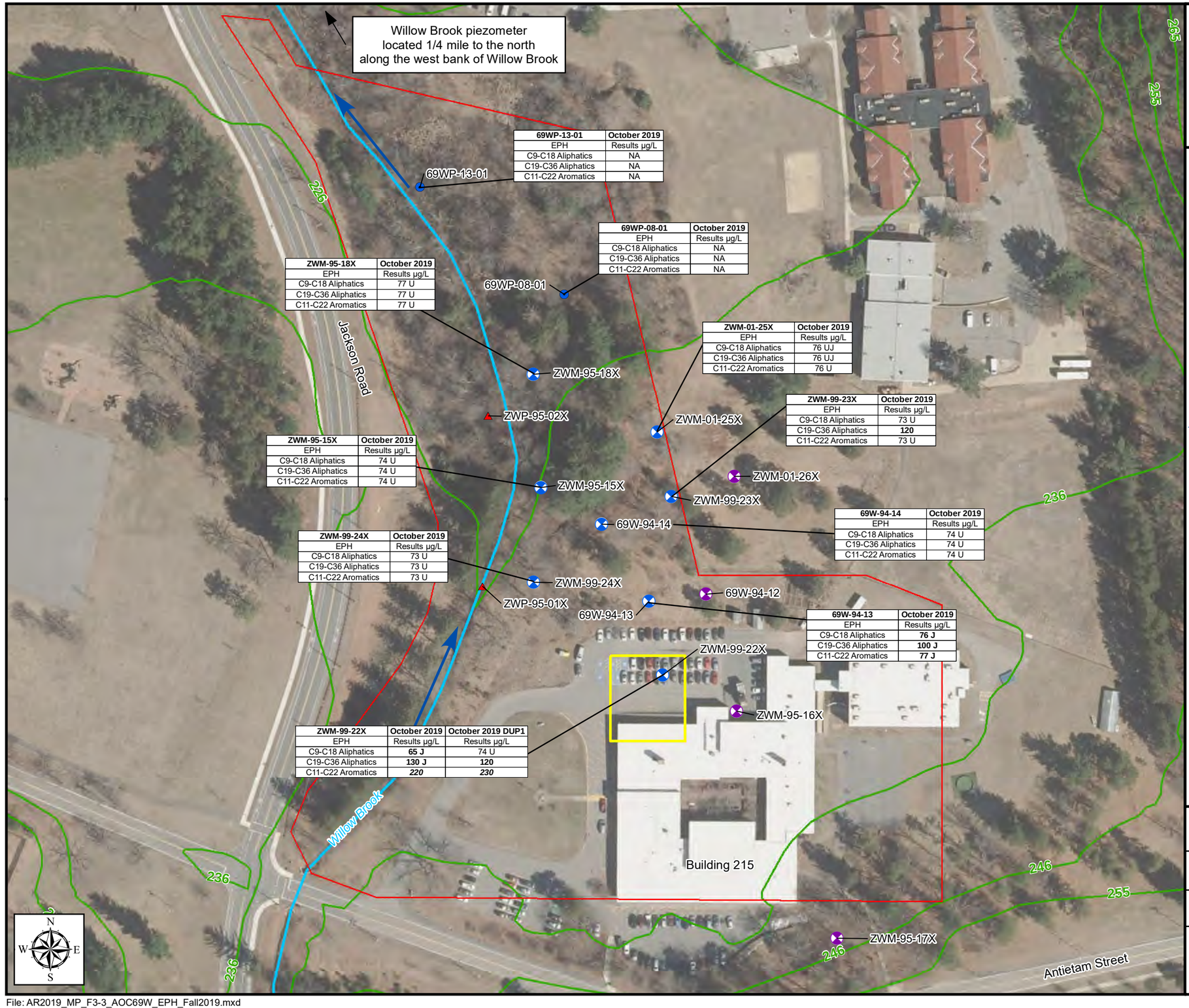
0 60 120
Feet

Date: 10/19/2020

Figure 3-2

File: AR2019_MP_F3-2_AOC69W_GWC1019.mxd

Figure 3-3
EPH Concentrations in Groundwater
Area of Contamination 69W
October 2019



69WP-13-01	October 2019
EPH	Results µg/L
C9-C18 Aliphatics	NA
C19-C36 Aliphatics	NA
C11-C22 Aromatics	NA

69WP-08-01	October 2019
EPH	Results µg/L
C9-C18 Aliphatics	NA
C19-C36 Aliphatics	NA
C11-C22 Aromatics	NA

ZWM-95-18X	October 2019
EPH	Results µg/L
C9-C18 Aliphatics	77 U
C19-C36 Aliphatics	77 U
C11-C22 Aromatics	77 U

ZWM-01-25X	October 2019
EPH	Results µg/L
C9-C18 Aliphatics	76 UJ
C19-C36 Aliphatics	76 UJ
C11-C22 Aromatics	76 U

ZWM-99-23X	October 2019
EPH	Results µg/L
C9-C18 Aliphatics	73 U
C19-C36 Aliphatics	**120**
C11-C22 Aromatics	73 U

ZWM-95-15X	October 2019
EPH	Results µg/L
C9-C18 Aliphatics	74 U
C19-C36 Aliphatics	74 U
C11-C22 Aromatics	74 U

69W-94-14	October 2019
EPH	Results µg/L
C9-C18 Aliphatics	74 U
C19-C36 Aliphatics	74 U
C11-C22 Aromatics	74 U

ZWM-99-24X	October 2019
EPH	Results µg/L
C9-C18 Aliphatics	73 U
C19-C36 Aliphatics	73 U
C11-C22 Aromatics	73 U

69W-94-13	October 2019
EPH	Results µg/L
C9-C18 Aliphatics	**76 J**
C19-C36 Aliphatics	**100 J**
C11-C22 Aromatics	**77 J**

ZWM-99-22X	October 2019	October 2019 DUP1
EPH	Results µg/L	Results µg/L
C9-C18 Aliphatics	**65 J**	74 U
C19-C36 Aliphatics	**130 J**	**120**
C11-C22 Aromatics	***220***	***230***

Legend

- LTM Sample Well
- LTM Sample Well Point
- LTM Well - Gauge Only
- LTM Piezometer
- ZWM-01-26X — Well/Piezometer/Surface Water Elevation Location
- Parcel Boundary
- Surface Water Course
- Surface Water Flow Direction
- Excavated Soils Management
- Topographic Contour (ft

Notes:

Monitoring Criteria (µg/L)	
C9-C18 Aliphatics	**700**
C19-C36 Aromatics	**14,000**
C11-C22 Aromatics	**200**

NA = Not Analyzed
J = Estimated Value
U = Not Detected
Bold concentrations indicate detected parameter
µg/L = micrograms per liter
EPH = Extractable Petroleum Hydrocarbon
LTM = Long-term monitoring

Aerial Sources: 2019, USGS, MassGIS

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AOC 69W

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293 Boston Post Road West, Suite 100, Marlborough, MA 01752

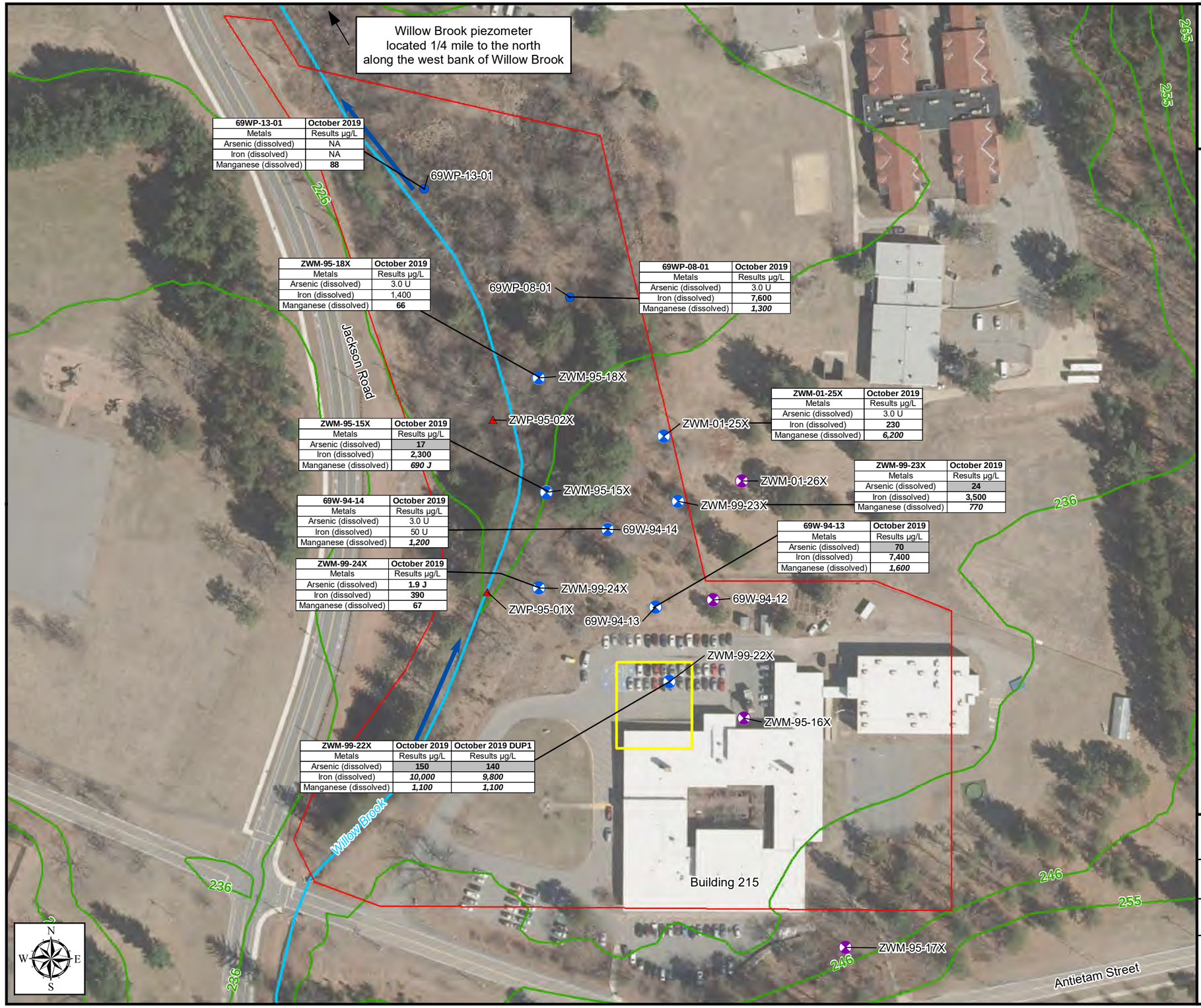
0 60 120
Feet

Date: 10/19/2020

Figure 3-3

File: AR2019_MP_F3-3_AOC69W_EPH_Fall2019.mxd

Figure 3-4
Metal Concentrations in Groundwater Area of Contamination 69W October 2019



69WP-13-01	October 2019
Metals	Results µg/L
Arsenic (dissolved)	NA
Iron (dissolved)	NA
Manganese (dissolved)	**88**

ZWM-95-18X	October 2019
Metals	Results µg/L
Arsenic (dissolved)	3.0 U
Iron (dissolved)	1,400
Manganese (dissolved)	**66**

69WP-08-01	October 2019
Metals	Results µg/L
Arsenic (dissolved)	3.0 U
Iron (dissolved)	**7,600**
Manganese (dissolved)	***1,300***

ZWM-01-25X	October 2019
Metals	Results µg/L
Arsenic (dissolved)	3.0 U
Iron (dissolved)	**230**
Manganese (dissolved)	***6,200***

ZWM-95-15X	October 2019
Metals	Results µg/L
Arsenic (dissolved)	**17**
Iron (dissolved)	**2,300**
Manganese (dissolved)	***690 J***

ZWM-99-23X	October 2019
Metals	Results µg/L
Arsenic (dissolved)	**24**
Iron (dissolved)	**3,500**
Manganese (dissolved)	***770***

69W-94-14	October 2019
Metals	Results µg/L
Arsenic (dissolved)	3.0 U
Iron (dissolved)	50 U
Manganese (dissolved)	***1,200***

69W-94-13	October 2019
Metals	Results µg/L
Arsenic (dissolved)	**70**
Iron (dissolved)	**7,400**
Manganese (dissolved)	***1,600***

ZWM-99-24X	October 2019
Metals	Results µg/L
Arsenic (dissolved)	**1.9 J**
Iron (dissolved)	**390**
Manganese (dissolved)	**67**

ZWM-99-22X	October 2019	October 2019 DUP1
Metals	Results µg/L	Results µg/L
Arsenic (dissolved)	**150**	**140**
Iron (dissolved)	***10,000***	***9,800***
Manganese (dissolved)	***1,100***	***1,100***

Legend

- LTM Sample Well
- LTM Sample Well Point
- LTM Well - Gauge Only
- LTM Piezometer
- ZWM-01-26X — Well/Piezometer/Surface Water Elevation Location
- Parcel Boundary
- Surface Water Course
- Surface Water Flow Direction
- Excavated Soils Management Area
- Topographic Contour (ft AMSL)

Notes:

Cleanup Goal (µg/L)	
Arsenic	**10**
Monitoring Criteria (µg/L)	
Iron	***9,100***
Manganese	***291***

NA = Not Analyzed
J = Estimated Value
U = Not Detected
Bold concentrations indicate detected parameter
Italics and bold concentrations indicate detection above Background
Shaded and bold concentrations indicate detection above Cleanup Goal
µg/L = micrograms per liter
LTM = Long-term monitoring

Aerial Sources: 2019, USGS, MassGIS

AOC 69W lies within the MassDEP Zone II Wellhead Protection Area for the MacPherson well.

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AOC 69W

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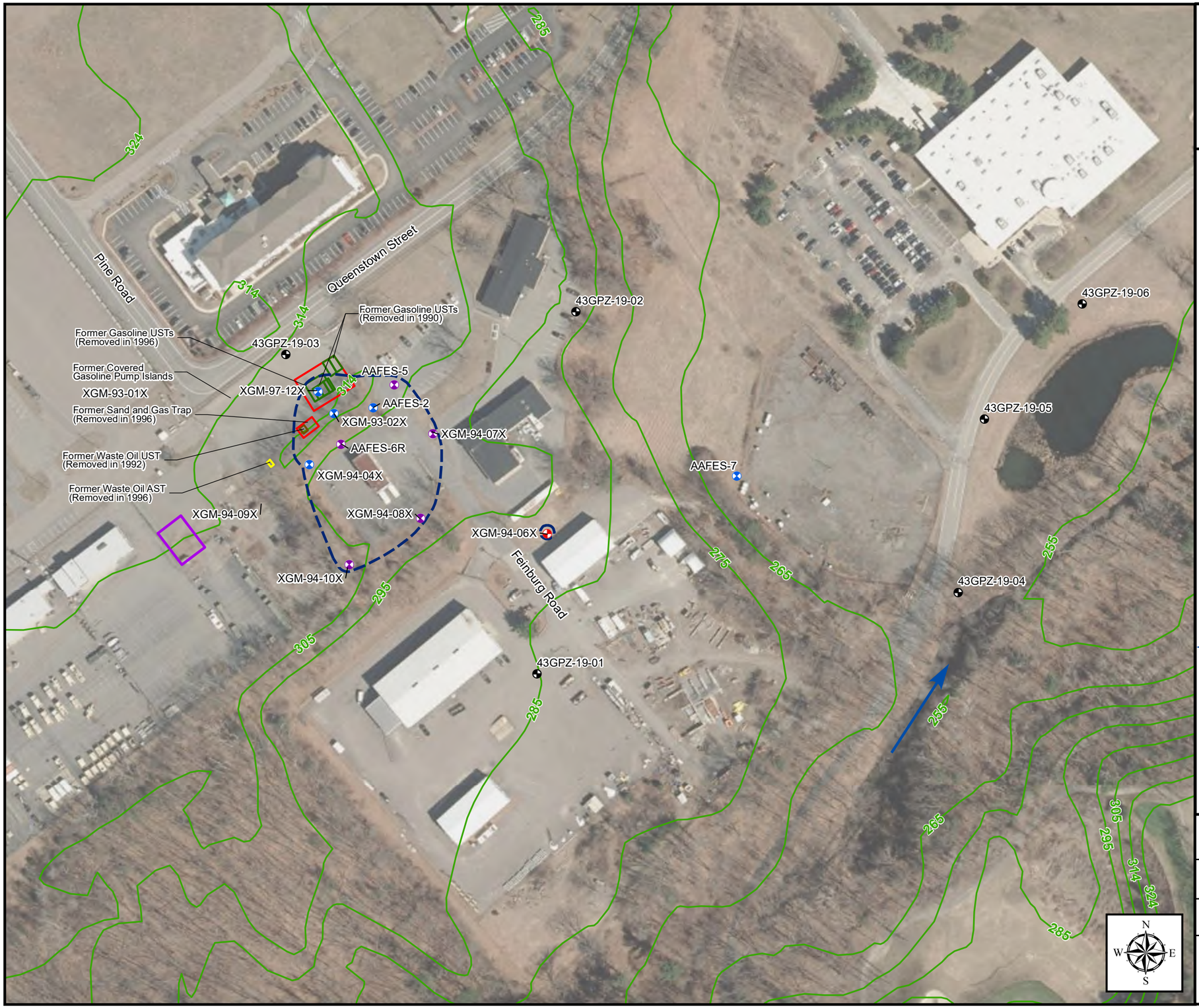
0 60 120
Feet

Date: 10/19/2020

Figure 3-4

File: AR2019_MP_F3-4_AOC69W_Metals_Fall2019.mxd

Figure 4-1
Site Layout
Area of Contamination 43G



Legend

- Piezometer
- LTM Sample Well
- LTM Well - Gauge Only
- Monitoring Well
- XGP-94-04X — Well/Piezometer Identification
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on 1999 to 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area 1
- Former Gasoline UST(s)
- Former Waste Oil UST
- Former Waste Oil AST
- Former UST Area
- Topographic Contour (Ft AMSL)
- Surface Water Flow Direction

Notes:
AST = Above ground storage tank
UST = Underground storage Tank
LTM = Long-term monitoring

Aerial Sources: 2019, USGS, MassGIS

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AOC 43G

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0 75 150
Feet

Date: 10/19/2020

Figure 4-1

File: AR2019_MP_F4-1_AOC43G.mxd

Figure 4-2
Water Table Elevation
Area of Contamination 43G
October 2019

Queenstown Street

43GPZ-19-03 (283.69)
Former Gasoline USTs (Removed in 1996)
Former Covered Gasoline Pump Islands
XGM-93-01X
Area 2
Former Sand and Gas Trap (Removed in 1996)
Former Waste Oil UST (Removed in 1992)
Former Waste Oil AST (Removed in 1996)
XGM-94-09X
Former Gasoline USTs (Removed in 1990)
XGM-97-12X (281.65)
AAFES-5 (276.64)
XGM-93-02X (276.60)
AAFES-2 (279.60)
XGM-94-07X (273.28)
Area 3
AAFES-6R (276.96)
XGM-94-04X (279.15)
XGM-94-08X (271.50)
XGM-94-10X (275.25)
XGM-94-06X (258.67)
43GPZ-19-02 (261.59)
AAFES-7 (258.71)
43GPZ-19-01 (262.07)
61H-94-04
43GPZ-19-06 (244.34)
43GPZ-19-05 (245.23)
43GPZ-19-04 (247.13)
A
A'

Notes:
AST = Aboveground Storage Tank
UST = Underground Storage Tank
LTM = Long-Term Monitoring
NGVD88 = National Geodetic Vertical Datum (1988)

Aerial Sources: 2019, USGS, MassGIS

N W E S

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Piezometer - Abandoned
- Monitoring Well
- Monitoring Well - Abandoned
- Monitoring Well - Presumed Destroyed
- Piezometer
- XGP-94-04X — Well/Piezometer Identification
- Groundwater Elevation Contour (ft NGVD88) (Contour Interval = 2 ft)
- Inferred Groundwater Elevation Contour (ft NGVD88) (Contour Interval = 2 ft)
- (247.13) — Groundwater Elevation (ft NGVD88)
- A—A' — Groundwater Gradient Calculation Location
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on 1999 to 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area 1
- Former Gasoline UST(s)
- Former Waste Oil UST
- Former Waste Oil AST
- Former UST Area
- Topographic Contour (Ft AMSL)
- Surface Water Flow Direction

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AOC 43G

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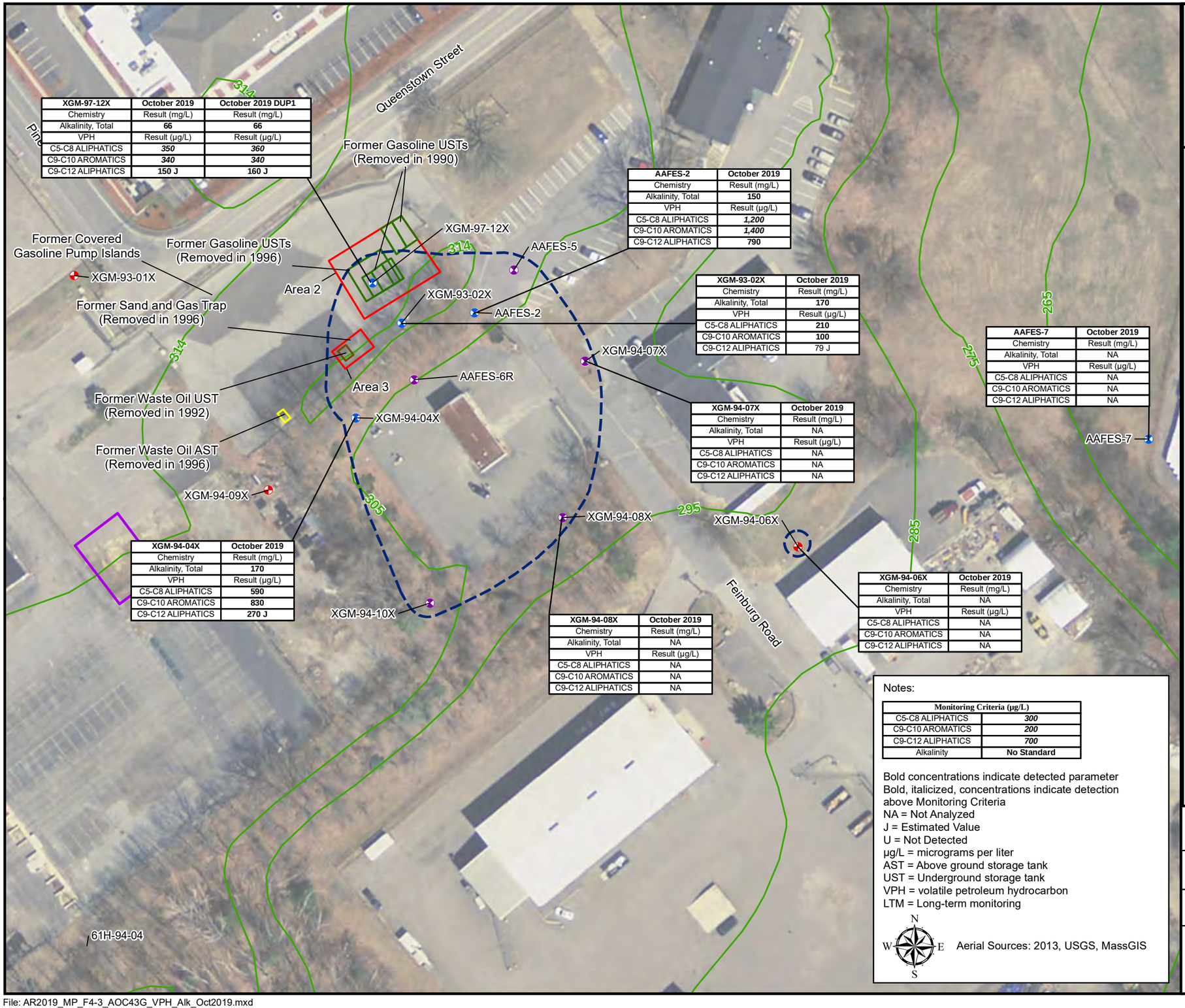
0 75 150
Feet

Date: 10/19/2020

Figure 4-2

File: AR2019_MP_F4-2_AOC43G_GWC1019.mxd

Figure 4-3
VPH and Alkalinity Concentrations
Area of Contamination 43G
October 2019



XGM-97-12X	October 2019	October 2019 DUP1
Chemistry	Result (mg/L)	Result (mg/L)
Alkalinity, Total	**66**	**66**
VPH	Result (µg/L)	Result (µg/L)
C5-C8 ALIPHATICS	***350***	***360***
C9-C10 AROMATICS	***340***	***340***
C9-C12 ALIPHATICS	**150 J**	**160 J**

AAFES-2	October 2019
Chemistry	Result (mg/L)
Alkalinity, Total	**150**
VPH	Result (µg/L)
C5-C8 ALIPHATICS	***1,200***
C9-C10 AROMATICS	***1,400***
C9-C12 ALIPHATICS	**790**

XGM-93-02X	October 2019
Chemistry	Result (mg/L)
Alkalinity, Total	**170**
VPH	Result (µg/L)
C5-C8 ALIPHATICS	**210**
C9-C10 AROMATICS	**100**
C9-C12 ALIPHATICS	79 J

AAFES-7	October 2019
Chemistry	Result (mg/L)
Alkalinity, Total	NA
VPH	Result (µg/L)
C5-C8 ALIPHATICS	NA
C9-C10 AROMATICS	NA
C9-C12 ALIPHATICS	NA

XGM-94-07X	October 2019
Chemistry	Result (mg/L)
Alkalinity, Total	NA
VPH	Result (µg/L)
C5-C8 ALIPHATICS	NA
C9-C10 AROMATICS	NA
C9-C12 ALIPHATICS	NA

XGM-94-04X	October 2019
Chemistry	Result (mg/L)
Alkalinity, Total	**170**
VPH	Result (µg/L)
C5-C8 ALIPHATICS	**590**
C9-C10 AROMATICS	**830**
C9-C12 ALIPHATICS	**270 J**

XGM-94-08X	October 2019
Chemistry	Result (mg/L)
Alkalinity, Total	NA
VPH	Result (µg/L)
C5-C8 ALIPHATICS	NA
C9-C10 AROMATICS	NA
C9-C12 ALIPHATICS	NA

XGM-94-06X	October 2019
Chemistry	Result (mg/L)
Alkalinity, Total	NA
VPH	Result (µg/L)
C5-C8 ALIPHATICS	NA
C9-C10 AROMATICS	NA
C9-C12 ALIPHATICS	NA

Notes:

Monitoring Criteria (µg/L)	
C5-C8 ALIPHATICS	***300***
C9-C10 AROMATICS	***200***
C9-C12 ALIPHATICS	***700***
Alkalinity	**No Standard**

Bold concentrations indicate detected parameter
Bold, italicized, concentrations indicate detection above Monitoring Criteria
NA = Not Analyzed
J = Estimated Value
U = Not Detected
µg/L = micrograms per liter
AST = Above ground storage tank
UST = Underground storage tank
VPH = volatile petroleum hydrocarbon
LTM = Long-term monitoring

N W E S

Aerial Sources: 2013, USGS, MassGIS

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Monitoring Well
- XGP-94-04X Well/Piezometer Identification
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on 1999 to 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Area 1
- Former Gasoline UST(s)
- Former Waste Oil UST
- Former Waste Oil AST
- Former UST Area
- Topographic Contour (ft AMSL)

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AOC 43G

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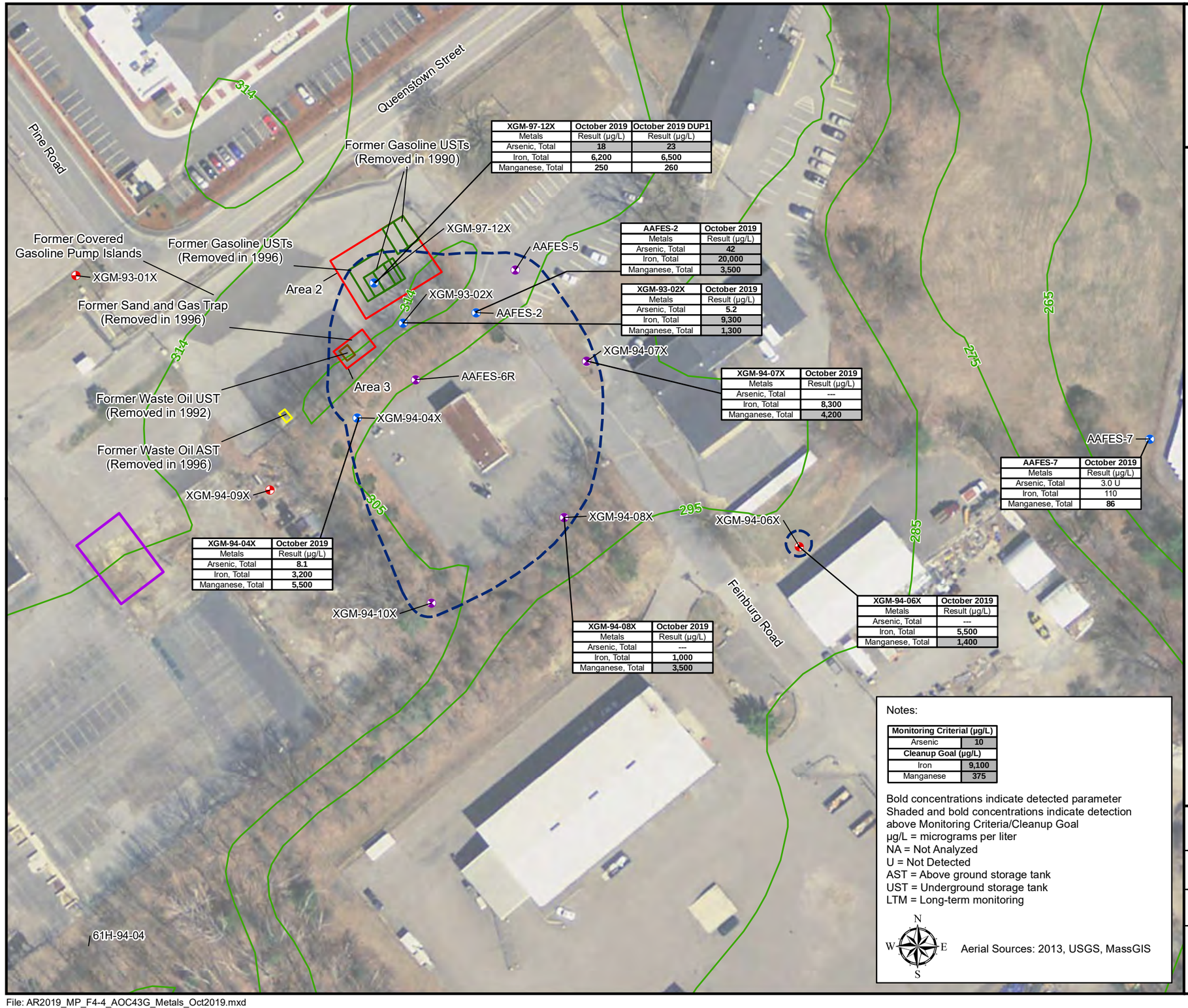
0 40 80 Feet

Date: 01/03/2020

Figure 4-3

File: AR2019_MP_F4-3_AOC43G_VPH_Alk_Oct2019.mxd

Figure 4-4
Metal Concentrations
Area of Contamination 43G
October 2019



XGM-97-12X	October 2019	October 2019 DUP1
Metals	Result (µg/L)	Result (µg/L)
Arsenic, Total	18	23
Iron, Total	6,200	6,500
Manganese, Total	250	260

AAFES-2	October 2019
Metals	Result (µg/L)
Arsenic, Total	42
Iron, Total	20,000
Manganese, Total	3,500

XGM-93-02X	October 2019
Metals	Result (µg/L)
Arsenic, Total	5.2
Iron, Total	9,300
Manganese, Total	1,300

XGM-94-07X	October 2019
Metals	Result (µg/L)
Arsenic, Total	---
Iron, Total	8,300
Manganese, Total	4,200

AAFES-7	October 2019
Metals	Result (µg/L)
Arsenic, Total	3.0 U
Iron, Total	110
Manganese, Total	86

XGM-94-04X	October 2019
Metals	Result (µg/L)
Arsenic, Total	8.1
Iron, Total	3,200
Manganese, Total	5,500

XGM-94-08X	October 2019
Metals	Result (µg/L)
Arsenic, Total	---
Iron, Total	1,000
Manganese, Total	3,500

XGM-94-06X	October 2019
Metals	Result (µg/L)
Arsenic, Total	---
Iron, Total	5,500
Manganese, Total	1,400

Notes:

Monitoring Criterial (µg/L)	
Arsenic	10
Cleanup Goal (µg/L)	
Iron	9,100
Manganese	375

Bold concentrations indicate detected parameter
Shaded and bold concentrations indicate detection above Monitoring Criteria/Cleanup Goal
µg/L = micrograms per liter
NA = Not Analyzed
U = Not Detected
AST = Above ground storage tank
UST = Underground storage tank
LTM = Long-term monitoring

N W E S

Aerial Sources: 2013, USGS, MassGIS

Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Monitoring Well
- XGP-94-04X Well/Piezometer Identification
- Area 1
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on 1999 to 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Former Gasoline UST(s)
- Former Waste Oil UST
- Former Waste Oil AST
- Former UST Area
- Topographic Contour (ft AMSL)

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AOC 43G

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Devens, Massachusetts

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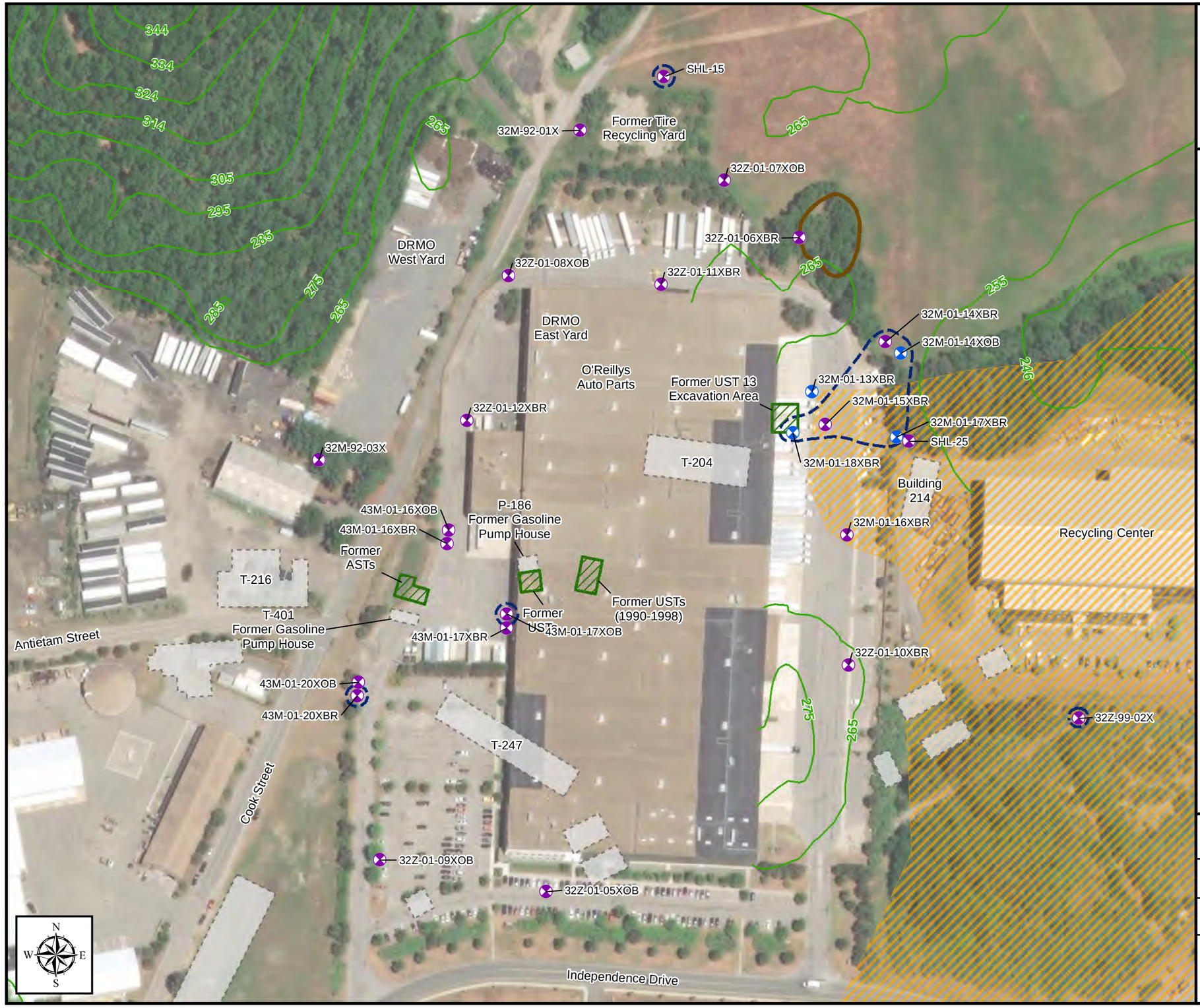
0 40 80
Feet

Date: 01/03/2020

Figure 4-4

File: AR2019_MP_F4-4_AOC43G_Metals_Oct2019.mxd

Figure 5-1
Site Layout
Area of Contamination 32 and 43A



Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- DEP Approved Wellhead Protection Areas (Zone II)
- 32M-92-01X — Well Identification
- Former Storage Tank(s)
- Former Building
- T-247 — Former Building Number
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Remaining Bedrock Outcrop
- Topographic Contour (Ft AMSL)

Notes:
AST = Above ground storage tank
UST = Underground storage Tank
DRMO = Defense Reutilization and Marketing Office
LTM = Long-term monitoring
TPHC = Total petroleum hydrocarbons

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

2019 Main Post Annual Report
AOC 32 and 43A

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Devens, Massachusetts

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0 80 160
Feet

Date: 02/03/2020

Figure 5-1

File: AR2019_MP_F5-1_AOC32-43A.mxd

Notes:
32Z-01-05XOB not used in contouring
AST = Aboveground Storage Tank
UST = Underground Storage Tank
DRMO = Defense Reutilization and Marketing Office
LTM = Long-Term Monitoring
TPHC = Total Petroleum Hydrocarbons
ft AMSL = Feet Above Mean Sea Level
NGVD88 = National Geodetic Vertical Datum (1988)

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,

Figure 5-2
Water Table Elevation Overburden Wells Areas of Contamination 32 and 43A April 2019

Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- Monitoring Well - Paved Over
- Groundwater Contour (ft NGVD88) (Interval = 2 ft)
- Groundwater Flow Direction
- (232.72) Groundwater Elevation (ft NGVD88)
- A—A' Groundwater Gradient Calculation Location
- 32M-92-01X Well Identification
- DEP Approved Wellhead Protection Areas (Zone II)
- Former Storage Tank(s)
- Former Building
- T-247 Former Building Number
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPHC Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (Ft AMSL)

2019 Main Post Annual Report
AOC 32 and 43A

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 80 160
Feet

Date: 01/13/2020

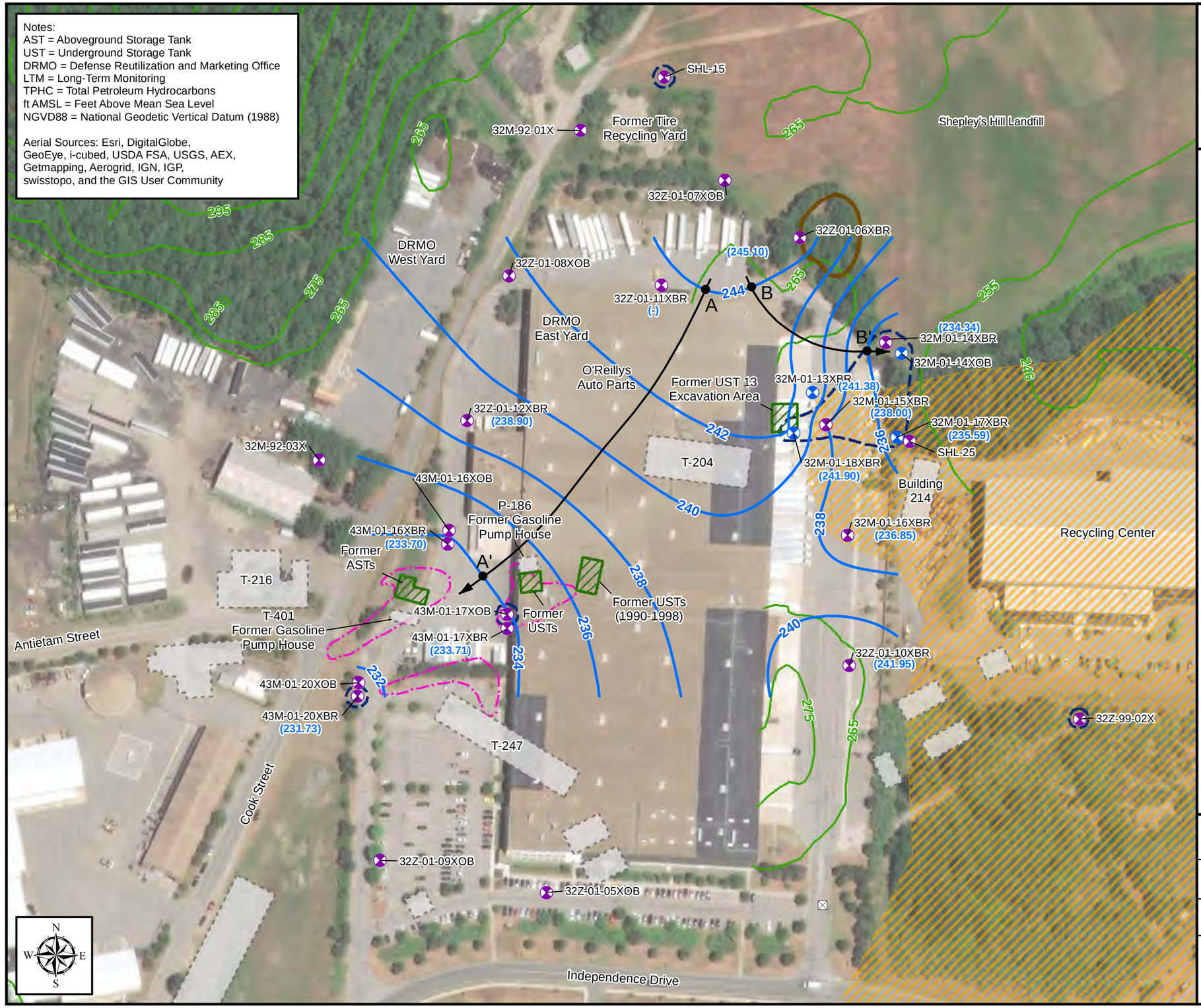
Figure 5-2

File: AR2019_MP_F5-2_AOC32-43A_GWC-OB_0419.mxd

Notes:
AST = Aboveground Storage Tank
UST = Underground Storage Tank
DRMO = Defense Reutilization and Marketing Office
LTM = Long-Term Monitoring
TPHC = Total Petroleum Hydrocarbons
ft AMSL = Feet Above Mean Sea Level
NGVD88 = National Geodetic Vertical Datum (1988)

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Figure 5-3
Water Table Elevation
Bedrock Wells
Areas of Contamination 32 and 43A
April 2019



Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- Monitoring Well - Paved Over
- Groundwater Contour (ft NGVD88) (Interval = 2 ft)
- (233.70) Groundwater Elevation (ft NGVD88)
- A—A' Groundwater Gradient Calculation Location
- DEP Approved Wellhead Protection Areas (Zone II)
- 32M-92-01X Well Identification
- Former Storage Tank(s)
- Former Building
- T-247 Former Building Number
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPHC Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (Ft AMSL)

2019 Main Post Annual Report
AOC 32 and 43A

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Devens, Massachusetts

KOMAN Government Solutions, LLC
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0 80 160
Feet

Date: 01/14/2020

Figure 5-3

File: AR2019_MP_F5-3_AOC32-43A_GWC-BR_0419.mxd

Figure 5-4
VPH and VOCs Concentrations
Area of Contamination 32 and 43A
April 2019

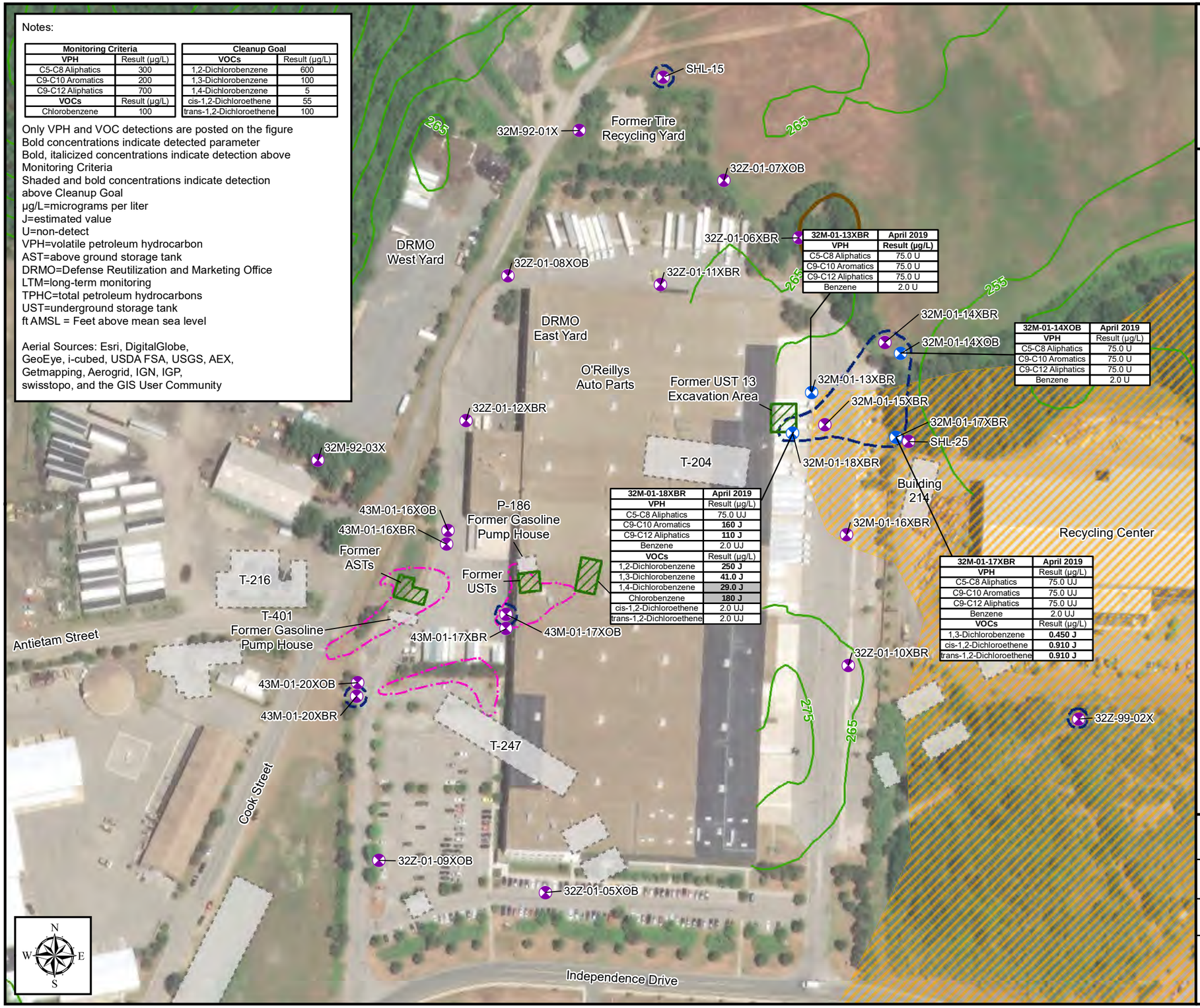
Notes:

Monitoring Criteria	
VPH	Result (µg/L)
C5-C8 Aliphatics	300
C9-C10 Aromatics	200
C9-C12 Aliphatics	700
VOCs	Result (µg/L)
Chlorobenzene	100

Cleanup Goal	
VOCs	Result (µg/L)
1,2-Dichlorobenzene	600
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	5
cis-1,2-Dichloroethene	55
trans-1,2-Dichloroethene	100

Only VPH and VOC detections are posted on the figure
Bold concentrations indicate detected parameter
Bold, italicized concentrations indicate detection above Monitoring Criteria
Shaded and bold concentrations indicate detection above Cleanup Goal
µg/L=micrograms per liter
J=estimated value
U=non-detect
VPH=volatile petroleum hydrocarbon
AST=above ground storage tank
DRMO=Defense Reutilization and Marketing Office
LTM=long-term monitoring
TPHC=total petroleum hydrocarbons
UST=underground storage tank
ft AMSL = Feet above mean sea level

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



32M-01-13XBR	April 2019
VPH	Result (µg/L)
C5-C8 Aliphatics	75.0 U
C9-C10 Aromatics	75.0 U
C9-C12 Aliphatics	75.0 U
Benzene	2.0 U

32M-01-14XOB	April 2019
VPH	Result (µg/L)
C5-C8 Aliphatics	75.0 U
C9-C10 Aromatics	75.0 U
C9-C12 Aliphatics	75.0 U
Benzene	2.0 U

32M-01-18XBR	April 2019
VPH	Result (µg/L)
C5-C8 Aliphatics	75.0 UJ
C9-C10 Aromatics	**160 J**
C9-C12 Aliphatics	**110 J**
Benzene	2.0 UJ
VOCs	Result (µg/L)
1,2-Dichlorobenzene	**250 J**
1,3-Dichlorobenzene	**41.0 J**
1,4-Dichlorobenzene	**29.0 J**
Chlorobenzene	**180 J**
cis-1,2-Dichloroethene	2.0 UJ
trans-1,2-Dichloroethene	2.0 UJ

32M-01-17XBR	April 2019
VPH	Result (µg/L)
C5-C8 Aliphatics	75.0 UJ
C9-C10 Aromatics	75.0 UJ
C9-C12 Aliphatics	75.0 UJ
Benzene	2.0 UJ
VOCs	Result (µg/L)
1,3-Dichlorobenzene	**0.450 J**
cis-1,2-Dichloroethene	**0.910 J**
trans-1,2-Dichloroethene	**0.910 J**

Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- DEP Approved Wellhead Protection Areas (Zone II)
- 32M-92-01X — Well Identification
- Former Storage Tank(s)
- Former Building
- T-247 — Former Building Number
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPHC Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (Ft AMSL)

2019 Main Post Annual Report
AOC 32 and 43A

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 80 160
Feet

Date: 06/17/2019

Figure 5-4

File: AR2019_MP_F5-4_AOC32-43A_VPH_April2019.mxd

Figure 5-5
Metal Concentrations
Area of Contamination 32 and 43A
April 2019

Notes:

Cleanup Goal	
Metals	Result (µg/L)
Arsenic	10
Manganese	3,500

Bold concentrations indicate detected parameter
Shaded and bold concentrations indicate detection above Cleanup Goal
µg/L=micrograms per liter
J=estimated value
U=non-detect
AST=above ground storage tank
DRMO=Defense Reutilization and Marketing Office
LTM=long-term monitoring
TPHC=total petroleum hydrocarbons
UST=underground storage tank
ft AMSL = Feet above mean sea level

Aerial Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

SHL-15
32M-92-01X
Former Tire Recycling Yard
32Z-01-07XOB
32Z-01-06XBR
DRMO West Yard
32Z-01-08XOB
32Z-01-11XBR
DRMO East Yard
O'Reillys Auto Parts
Former UST 13 Excavation Area
32Z-01-12XBR
32M-92-03X
T-204
32M-01-13XBR
32M-01-14XBR
32M-01-14XOB
32M-01-15XBR
32M-01-17XBR
SHL-25
32M-01-18XBR
32M-01-16XBR
Recycling Center
43M-01-16XOB
43M-01-16XBR
P-186 Former Gasoline Pump House
Former ASTs
Former USTs
Former USTs (1990-1998)
T-216
T-401 Former Gasoline Pump House
Antietam Street
43M-01-17XBR
43M-01-17XOB
32Z-01-10XBR
43M-01-20XOB
43M-01-20XBR
32Z-99-02X
T-247
Cook Street
32Z-01-09XOB
32Z-01-05XOB
Independence Drive
N
W
E
S

32M-01-13XBR	April 2019
Metals	Result (µg/L)
Arsenic, Total	3.0 U
Manganese, Total	**50**

32M-01-14XOB	April 2019
Metals	Result (µg/L)
Arsenic, Total	**29**
Manganese, Total	**2,200**

32M-01-18XBR	April 2019	April 2019 (FD)
Metals	Result (µg/L)	Result (µg/L)
Arsenic, Total	**3.4**	**3.6**
Manganese, Total	**2,200 J**	**3,100 J**

32M-01-17XBR	April 2019
Metals	Result (µg/L)
Arsenic, Total	3.0 U
Manganese, Total	**3.0 J**

Legend

- LTM Sample Well
- LTM Well - Periodic Gauge Only
- DEP Approved Wellhead Protection Areas (Zone II)
- 32M-92-01X — Well Identification
- Former Storage Tank(s)
- Former Building
- T-247 — Former Building Number
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)
- TPHC Soil Contamination
- Remaining Bedrock Outcrop
- Topographic Contour (Ft AMSL)

2019 Main Post Annual Report
AOC 32 and 43A

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 80 160
Feet

Date: 06/12/2019

Figure 5-5

File: AR2019_MP_F5-5_AOC32-43A_Metals_April2019.mxd

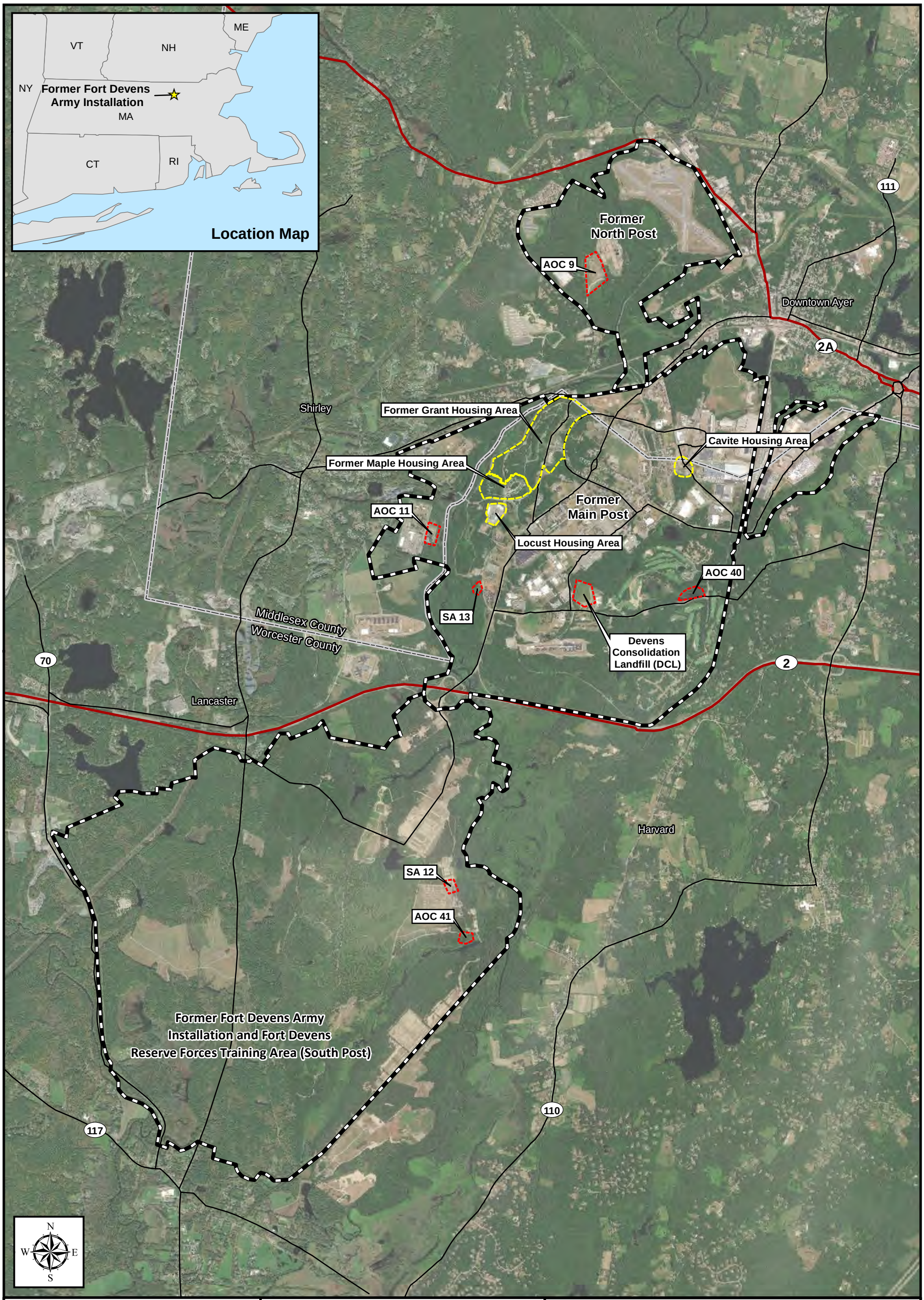


Figure 6-1
Devens Consolidation Landfill (DCL)
Contributor Site Locations

References: LTMMP Update (Sovereign, 2015)
Aerial: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Approximate AOC
- Approximate Housing
- Highway
- Major Road
- County Line
- Former Fort Devens Boundary

2019 Main Post Annual Report
Devens Consolidation Landfill

Former Fort Devens Army Installation,
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

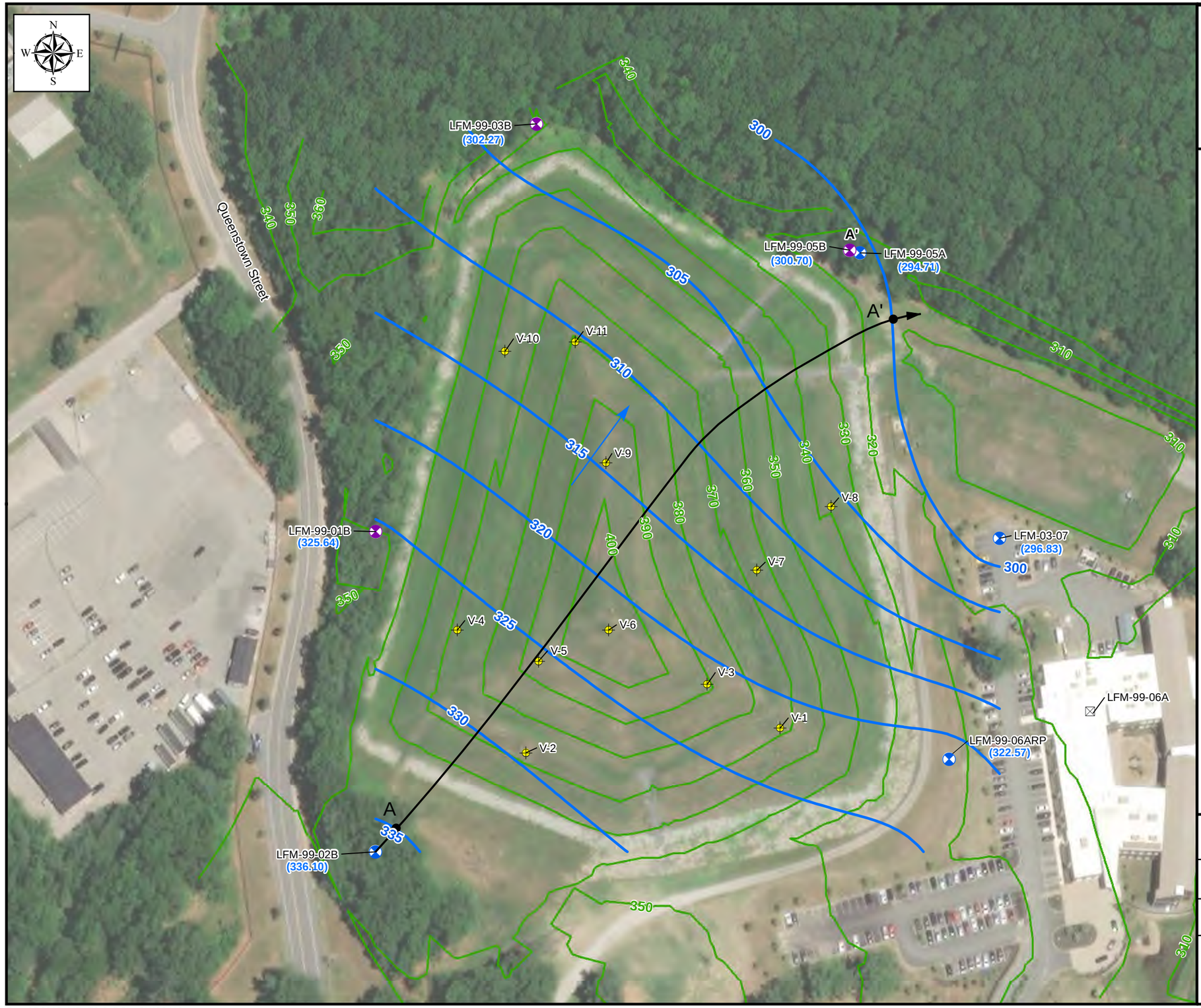
0 1,750 3,500
Feet

Date: 03/18/2020

Figure 6-1

File: AR2019_MP_F6-1_DCL_Contributor.mxd

Figure 6-2
Water Table Elevation
Devens Consolidation Landfill
April 2019



Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Gas Vent
- Monitoring Well - Destroyed
- Groundwater Elevation Contour (ft NGVD88) (Contour Interval = 5 ft)
- Groundwater Flow Direction
- (294.71) Groundwater Elevation (ft NGVD88)
- LFM-03-07 Well/Vent Identification
- A——A' Groundwater Gradient Calculation Location
- Topographic Contour (ft AMSL)

Notes:

LFM-03-07 was paved over with asphalt during parking lot construction for the neighboring building. In July 2017, LFM-03-07 was uncovered.

LFM-99-06A was replaced by LFM-99-06ARP in September 2015.

Gas vent locations were approximated based upon the locations displayed in Figure 2 of USACE New England District's Devens Consolidation Landfill 2004 Annual Report.

ft AMSL = Feet Above Mean Sea Level

LTM = Long-Term Monitoring

NGVD88 = National Geodetic Vertical Datum (1988)

Aerial Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2019 Main Post Annual Report
Devens Consolidation Landfill

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

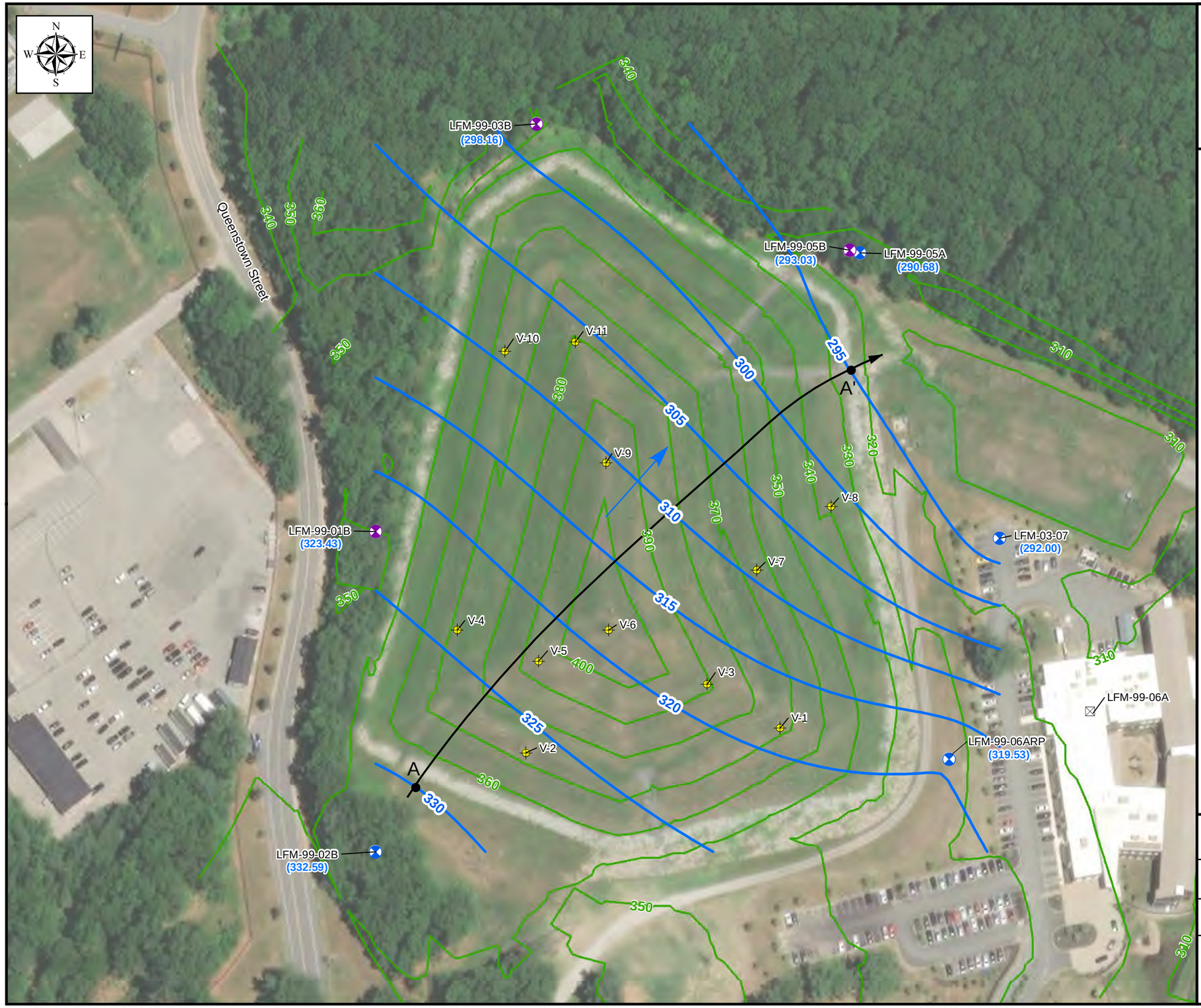
0 60 120
Feet

Date: 03/18/2020

Figure 6-2

File: AR2019_MP_F6-2_DCL_GWC0419.mxd

Figure 6-3
Water Table Elevation
Devens Consolidation Landfill
October 2019



Legend

- LTM Sample Well
- LTM Well - Gauge Only
- Gas Vent
- Monitoring Well - Destroyed
- Groundwater Flow Direction
- Groundwater Elevation Contour (ft NGVD88) (Contour Interval = 5 ft)
- (293.03) Groundwater Elevation (ft NGVD88)
- A——A' Groundwater Gradient Calculation Location
- LFM-03-07 Well/Vent Identification
- Topographic Contour (ft AMSL)

Notes:

LFM-03-07 was paved over with asphalt during parking lot construction for the neighboring building. In July 2017, LFM-03-07 was uncovered.

LFM-99-06A was replaced by LFM-99-06ARP in September 2015.

Gas vent locations were approximated based upon the locations displayed in Figure 2 of USACE New England District's Devens Consolidation Landfill 2004 Annual Report.

ft AMSL = Feet Above Mean Sea Level

LTM = Long-Term Monitoring

NGVD88 = National Geodetic Vertical Datum (1988)

Aerial Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2019 Main Post Annual Report
Devens Consolidation Landfill

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
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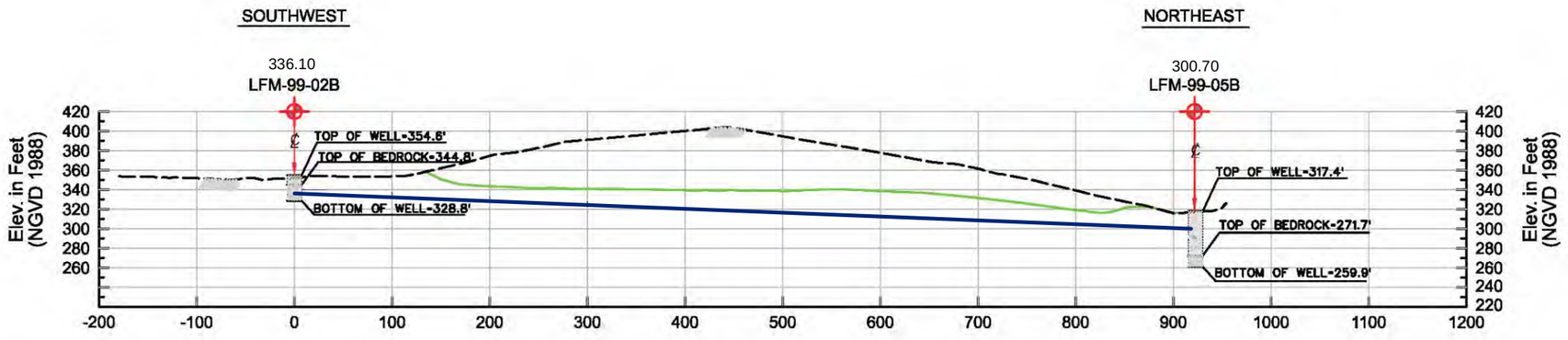
0 60 120
Feet

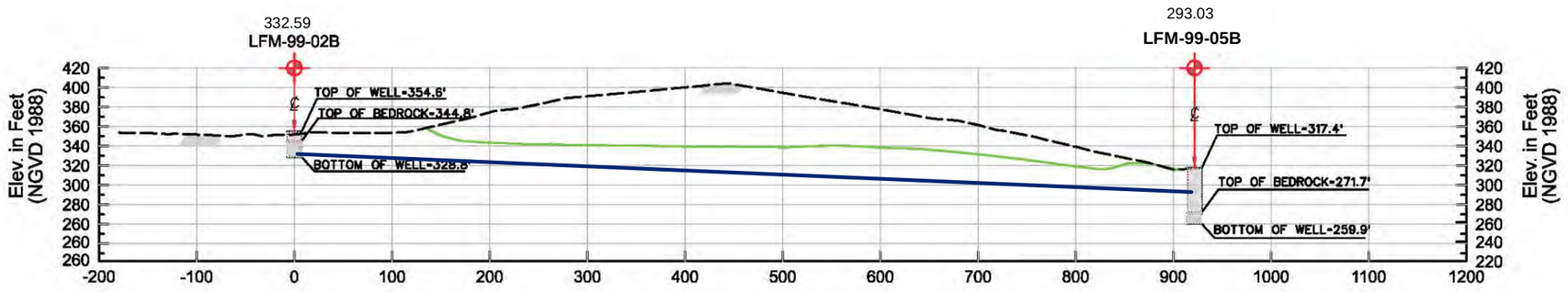
Date: 03/18/2020

Figure 6-3

File: AR2019_MP_F6-3_DCL_GWC1019.mxd



PROFILE 1 (April 2019)



PROFILE 2 (October 2019)

Figure 6-4
Devens Consolidation Landfill Profiles
LFM-99-02B to LFM-99-05B

Legend

- Existing Ground Surface
- Liner
- Bedrock Groundwater Levels
- Monitoring Well

Notes:

1. Horizontal and vertical scales as shown. No vertical exaggeration.

2. Existing ground surface and liner elevations based on figures from the remedial action closure report by Shaw Environmental, Inc. September 2003.

3. Bedrock wells water table elevations based on contours generated from April and October 2019 measurements.

NGVD = National Geodetic Vertical Datum

2019 Main Post Annual Report
Devens Consolidation Landfill

Former Fort Devens Army Installation
Devens, Massachusetts

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Date:	Figure	
03/18/2020	6-4	

File: AR2019_MP_F6-4_DCL_Profiles.mxd

Figure 7-1
Site Location
Grant Housing Area/
Oak and Maple Housing Area/
37-mm Impact Area



Legend

- Former Grant Housing Area
- Former Maple Housing Area
- 37-mm Impact Area
- Approximate Former Firing Location
- Road
- Surface Water Flow Direction

Aerial Sources: 2019, USGS, MassGIS

2019 Main Post Annual Report
Housing Areas

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 250 500
Feet

Date: 10/19/2020

Figure 7-1

File: AR2019_MP_F7-1_GrantHousingAreas.mxd



TABLES

Table 1-1
Groundwater Elevations, Spring 2019 LTM Event
Main Post, Former Fort Devens Army Installation, Massachusetts

Site Name	Well Identification	Date of Gauging	DTW (ft bTOR)	TOR Elevation (ft NAVD 88)	GW Elevation (ft NAVD 88)
DCL	LFM-99-01B	4/9/2019	25.03	350.67	325.64
	LFM-99-02B	4/9/2019	17.73	353.83	336.10
	LFM-99-03B	4/9/2019	39.81	342.08	302.27
	LFM-99-05A	4/9/2019	21.87	316.58	294.71
	LFM-99-05B	4/9/2019	15.88	316.58	300.70
	LFM-99-06ARP	4/9/2019	15.27	337.84	322.57
	LFM-03-07	4/9/2019	18.31	315.14	296.83
AOC 57, Area 2	57M-03-01X	4/5/2019	13.73	237.10	223.37
	57M-03-02X	4/5/2019	4.52	226.30	221.78
	57M-03-03X	4/5/2019	0.87	222.84	221.97
	57M-03-04X	4/5/2019	1.96	223.22	221.26
	57M-03-05X	4/5/2019	2.45	223.53	221.08
	57M-03-06X	4/5/2019	2.40	223.76	221.36
	57M-95-03X	4/5/2019	9.94	234.17	224.23
	57M-95-05X	4/5/2019	14.05	236.51	222.46
	57M-95-06X	4/5/2019	12.05	235.76	223.71
	57M-95-07X	4/5/2019	2.23	223.77	221.54
	57WP-05-01	--	--	--	--
	57WP-06-02	4/5/2019	0.87	222.11	221.24
AOC 57, Area 3	57M-95-03X	4/5/2019	9.94	234.17	224.23
	57M-96-10X	4/5/2019	6.21	228.75	222.54
	57M-96-11X	4/5/2019	2.74	223.58	220.84
	57M-96-12X	4/5/2019	4.31	227.07	222.76
	57M-96-13X	4/5/2019	4.16	226.93	222.77
	57P-98-03X	4/5/2019	2.30	221.78	219.48
	57P-98-04X	4/5/2019	3.60	222.92	219.32
	57WP-06-03	4/5/2019	0.85	221.89	221.04
AOC 32/43A Overburden Wells	SHL-15	04/08/2019	17.25	259.92	242.67
	32M-92-01X	04/08/2019	17.03	260.17	243.14
	32Z-99-02X (32M-92-02X)	04/08/2019	23.50	259.71	236.21
	32M-01-14XOB	04/08/2019	23.26	256.56	233.30
	32M-92-03X	04/08/2019	26.65	260.02	233.37
	SHL-25	04/08/2019	24.70	258.01	233.31
	32Z-01-05XOB	04/08/2019	27.63	260.60	232.97
	32Z-01-07XOB	04/08/2019	15.08	259.48	244.40
	32Z-01-08XOB	04/08/2019	17.65	260.49	242.84
	32Z-01-09XOB	04/08/2019	24.65	257.37	232.72
	43M-01-16XOB	04/08/2019	23.45	256.88	233.43
	43M-01-17XOB	04/08/2019	24.95	258.08	233.13
	43M-01-20XOB	04/08/2019	24.71	257.40	232.69

Table 1-1
Groundwater Elevations, Spring 2019 LTM Event
Main Post, Former Fort Devens Army Installation, Massachusetts

Site Name	Well Identification	Date of Gauging	DTW (ft bTOR)	TOR Elevation (ft NAVD 88)	GW Elevation (ft NAVD 88)
AOC 32/43A Bedrock Wells	32M-01-13XBR	04/08/2019	16.50	257.88	241.38
	32M-01-14XBR	04/08/2019	21.72	256.06	234.34
	32M-01-15XBR	04/08/2019	19.70	257.70	238.00
	32M-01-16XBR	04/08/2019	20.65	257.50	236.85
	32M-01-17XBR (32M-01-17X)	04/08/2019	23.52	259.11	235.59
	32M-01-18XBR	04/08/2019	16.42	258.32	241.90
	32Z-01-06XBR	04/08/2019	16.75	261.85	245.10
	32Z-01-10XBR	04/08/2019	15.46	257.41	241.95
	32Z-01-11XBR	04/08/2019	17.05	261.50	244.45
	32Z-01-12XBR	04/08/2019	18.95	257.85	238.90
	43M-01-16XBR	04/08/2019	23.14	256.84	233.70
	43M-01-17XBR	04/08/2019	24.58	258.29	233.71
	43M-01-20XBR	04/08/2019	25.57	257.30	231.73

Notes:
AOC = Area of Contamination
DCL = Devens Consolidation Landfill
DTW = Distance to Water
TOR = Top of Riser
ft = Feet
ft BTOR = feet below top of riser
GW = Groundwater

Table 1-2
Groundwater Elevations, Fall 2019 LTM Event
Main Post, Former Fort Devens Army Installation, Massachusetts

Site Name	Well Identification	Date of Gauging	DTW (ft bTOR)	TOR Elevation (ft NAVD 88)	GW Elevation (ft NAVD 88)
43G	XGM-93-02X	10/2/2019	29.20	309.01	279.81
	XGM-94-04X	10/2/2019	21.55	300.69	279.14
	XGM-94-06X	10/2/2019	24.60	284.07	259.47
	XGM-94-07X	10/2/2019	21.52	294.82	273.30
	XGM-94-08X	10/2/2019	27.50	298.98	271.48
	XGM-94-10X	10/2/2019	26.65	301.96	275.31
	XGM-97-12X	10/2/2019	27.18	308.70	281.52
	AAFES-2	10/2/2019	25.40	301.72	276.32
	AAFES-5	10/2/2019	23.48	299.80	276.32
	AAFES-6R	10/2/2019	21.78	298.74	276.96
	AAFES-7	10/2/2019	10.80	257.77	246.97
	43GPZ-19-01	10/2/2019	18.60	280.67	262.07
	43GPZ-19-02	10/2/2019	28.50	290.09	261.59
	43GPZ-19-03	10/2/2019	24.30	307.99	283.69
	43GPZ-19-04	10/2/2019	9.62	256.75	247.13
	43GPZ-19-05	10/2/2019	9.59	254.82	245.23
	43GPZ-19-06	10/2/2019	10.52	254.86	244.34
DCL	LFM-03-07	10/4/2019	23.14	315.14	292.00
	LFM-99-01B	10/4/2019	27.24	350.67	323.43
	LFM-99-02B	10/4/2019	21.24	353.83	332.59
	LFM-99-03B	10/4/2019	43.92	342.08	298.16
	LFM-99-05A	10/4/2019	25.9	316.58	290.68
	LFM-99-05B	10/4/2019	23.55	316.58	293.03
	LFM-99-06ARP	10/4/2019	18.31	337.84	319.53
69W	ZWM-01-25X	10/2/2019	6.44	224.71	218.27
	ZWM-01-26X	10/2/2019	7.90	226.81	218.91
	ZWM-95-15X	10/2/2019	6.33	225.01	218.68
	ZWM-95-16X	10/2/2019	6.60	227.58	220.98
	ZWM-95-17X	10/2/2019	15.95	237.83	221.88
	ZWM-95-18X	10/2/2019	4.56	222.15	217.59
	ZWM-99-22X	10/2/2019	6.63	226.72	220.09
	ZWM-99-23X	10/2/2019	6.20	225.08	218.88
	ZWM-99-24X	10/2/2019	6.65	225.85	219.20
	ZWP-95-01X	10/2/2019	6.80	226.04	219.24
	ZWP-95-02X	10/2/2019	5.22	222.83	217.61
	69W-94-12	10/2/2019	5.49	228.14	222.65
	69W-94-13	10/2/2019	7.30	226.99	219.69
	69W-94-14	10/2/2019	8.42	227.22	218.80
	69WP-08-01	10/2/2019	3.62	220.70	217.08
	69WP-13-01[(e)]	10/2/2019	3.31	220.70	217.39

Notes:
AOC = Area of Contamination
DCL = Devens Consolidation Landfill
DTW = Distance to Water
TOR = Top of Riser
ft = Feet
ft BTOR = feet below top of riser
GW = Groundwater
[(e)] TOR Elevation is estimated.

Table 1-3
Monthly Precipitation Data
Main Post, Former Fort Devens Army Installation, Massachusetts

	Year																
Month	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**Average**
January	0.75	3.46	4.58	2.72	2.38	2.49	3.31	3.66	2.18	1.38	2.18	2.73	1.48	3.00	2.19	3.40	2.62
February	1.32	2.17	2.28	1.21	8.85	2.51	6.05	4.11	1.12	2.91	3.16	0.55	3.36	2.34	3.07	3.00	3.00
March	2.97	4.08	0.53	3.97	5.28	2.40	10.61	4.08	1.25	2.31	4.16	1.03	3.12	3.86	2.88	1.95	3.41
April	7.67	5.47	2.21	7.09	3.61	4.00	1.43	5.05	2.87	1.62	3.25	0.33	1.89	4.85	5.25	6.72	3.96
May	3.43	4.25	7.32	4.37	1.99	3.97	3.37	3.81	3.13	5.38	3.29	0.10	2.04	6.21	1.61	3.12	3.59
June	1.67	3.87	9.31	1.56	4.02	6.41	3.53	5.69	4.03	8.53	1.76	2.76	1.04	3.97	4.71	5.56	4.28
July	4.72	1.67	1.71	6.25	6.35	9.61	4.01	2.27	1.46	3.46	4.10	1.73	1.92	3.37	3.49	3.64	3.74
August	2.77	2.56	4.38	1.40	4.66	2.64	3.58	10.99	4.92	2.09	2.25	1.17	2.55	1.83	10.10	4.00	3.87
September	7.35	1.67	2.87	2.25	8.05	1.28	2.48	6.94	3.06	1.64	1.07	3.23	0.05	4.54	7.79	0.48	3.42
October	1.91	13.46	6.10	3.35	1.81	3.99	6.17	7.12	5.12	1.28	5.22	3.60	4.58	9.12	4.12	6.01	5.19
November	3.42	4.40	6.38	2.67	3.66	3.43	3.92	3.94	0.47	2.66	3.60	1.66	3.27	1.22	8.81	0.62	3.38
December	3.89	3.79	1.77	3.67	3.78	3.69	4.08	4.84	3.39	3.46	4.44	2.10	3.40	2.50	3.61	0.28	3.29
TOTAL	**41.87**	**50.85**	**49.44**	**40.51**	**54.44**	**46.42**	**52.54**	**62.50**	**33.00**	**36.72**	**38.48**	**20.99**	**28.70**	**46.81**	**57.63**	**38.78**	**43.73**

Notes:
2018 monthly data retrieved from the National Oceanic and Atmospheric Administration (NOAA) data inventory.
Total Inches of Precipitation Per Month
Fitchburg, Massachusetts Weather Station

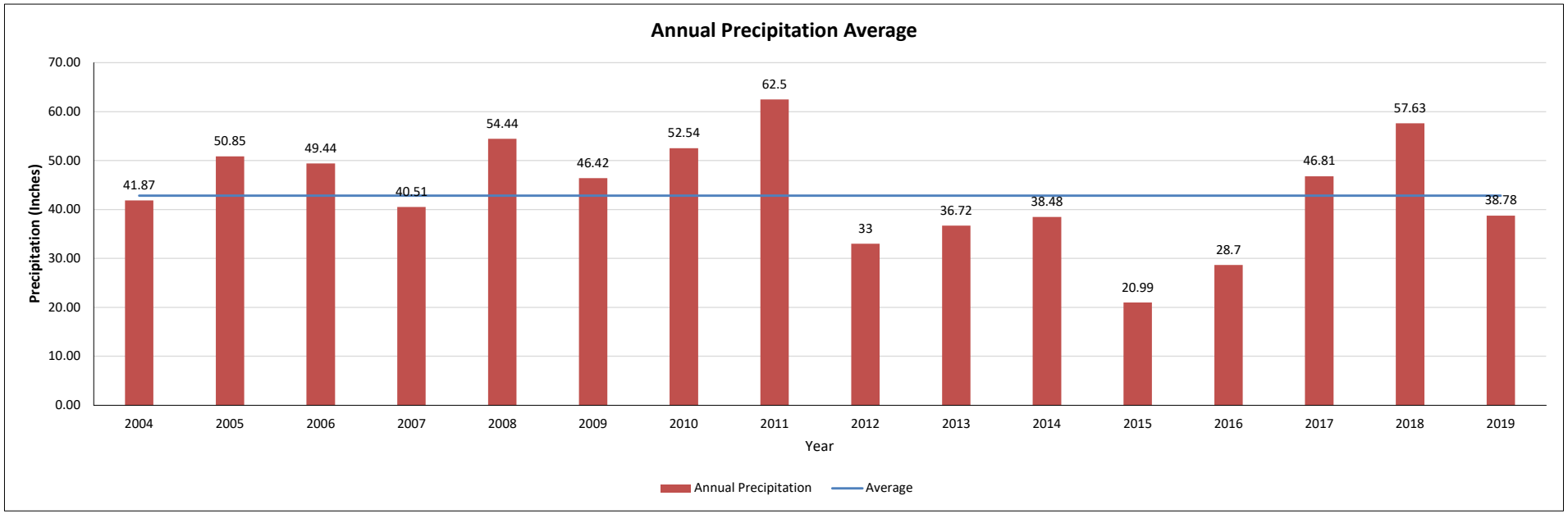

Table 1-4
Analytical Methods, Containers, Holding Times, and Preservatives
Main Post, Former Fort Devens Army Installation, Massachusetts

Site/Events	Parameter	Analytical Method[1]	Contaminant of Concern	Sample Container[2]	Preservative	Holding Time
AOC 57 (Spring)	Dissolved Metals*	SW6010C/6020A	As, Fe, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
	Total Metals	SW6010C/6020A	As, Fe, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
AOC 32/43A (Spring)	VOCs	SW8260B	TAL	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	VPH	MADEP-VPH-04-1.1	VPH/BTEX	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	Total Metals	SW6010C/6020A	As, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
	Dissolved Metals*	SW6010C/6020A	As, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
AOC 69W (Fall)	EPH	MADEP-EPH-04-1.1	EPH	2 x 1-Liter Glass Amber with Teflon- lined lid	HCl to pH < 2; 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Dissolved Metals*	SW6010C/6020A	As, Fe, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
AOC 43G (Fall)	VPH	MADEP-VPH-04-1.1	VPH/BTEX	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	Total Metals	SW6010C/6020A	Fe, Mn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
	Alkalinity	SM2320B	None	1 x 250-ml Polyethylene	Store at 4°± 2°C	14 Days
DCL (GW) (Spring/Fall)	VPH	MADEP-VPH-04-1.1	VPH/BTEX	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	EPH	MADEP-EPH-04-1.1	EPH	2 x 1-Liter Glass Amber with Teflon- lined lid	HCl to pH < 2; 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Pesticides	SW8081A	TAL	2 x 1-Liter Glass Amber with Teflon- lined lid	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Select Metals (Total)	SW6010C/6020A	Select Metals for DCL Groundwater: As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
	Mercury	SW7470A	Hg			28 days
	Cyanide (Total)	SW9012B	Cyanide (Total)	1 x 250-ml Polyethylene	NAOH to pH > 12; 4°± 2°C	14 Days

Table 1-4
Analytical Methods, Containers, Holding Times, and Preservatives
Main Post, Former Fort Devens Army Installation, Massachusetts

Site/Events	Parameter	Analytical Method[1]	Contaminant of Concern	Sample Container[2]	Preservative	Holding Time
DCL (GW) (Spring/Fall) Cont.	TDS	SM2540C-11	None	1 x 500-ml Polyethylene	Store at 4°± 2°C	7 days
	Anions	SW9056A	Chloride, Sulfate	1 x 125-ml Polyethylene	Store at 4°± 2°C	28 days
	Alkalinity	SM2320B	None	1 x 250-ml Polyethylene	Store at 4°± 2°C	14 Days
	COD	410.4	None	1 x 250-ml Polyethylene	H2SO4 to pH < 2; 4°± 2°C	28 Days
	Nitrate/Nitrite as N	E353.2	Nitrate/Nitrite as N	1 x 500-ml Polyethylene	H2SO4 to pH < 2; 4°± 2°C	28 Days
DCL (Leachate) (Fall)	Select Metals (Total)	SW6010C/6020A	Select Metals for DCL Leachate: Al, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	180 Days
	Mercury	SW7470A	Hg	1 x 250-ml Polyethylene	HNO3 to pH < 2; 4°± 2°C	28 days
	Cyanide (Total)	SW9012B	Cyanide (Total)	1 x 250-ml Polyethylene	NAOH to pH > 12; 4°± 2°C	14 Days
	TSS/pH	SM2540D/SW9040C		1 x 1-liter Polyethylene	Store at 4°± 2°C	7 days
	TPH as DRO	SW8015B	DRO	2 x 1-Liter Glass Amber with Teflon- lined lid	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	Total Phenolics	SW9065	Total Phenols	1 x 250-ml amber	H2SO4 to pH < 2; 4°± 2°C	28 days
	TTO (VOCs)	624.00	VOCs	3 x 40-ml vials with teflon septa screw caps; no headspace	HCl to pH < 2; 4°± 2°C	14 Days
	TTO (SVOCs)	625.00	SVOCs	2 x 1-liter amber	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)
	TTO (Pesticides/PCBs)	SW8081B/8082A	Pesticides/PCBs	2 x 1-liter amber	Store at 4°± 2°C	7 Days (extraction) 40 Days (analyses)

Notes:

* Samples submitted for dissolved metals are field filtered.

1 "Methods for Chemical Analysis of Water and Wastes", Cincinnati, OH, March 1979, EPA 600-4-79.
"Test Methods for Evaluating Solid Waste, Physical and Chemical Methods", U.S. EPA SW-846, Update 8, 2014.

2 Additional sample containers/volumes are required for matrix quality control samples.

DCL = Devens Consolidation Landfill
GW = Groundwater

Table 1-5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
Main Post, Former Fort Devens Army Installation, Massachusetts

Monitoring Well/ Piezometer/ Surface Water ID	Location	Rationale	Bottom of Screen Interval	Top of Screen Interval	Well Screen Intervals	Top of Casing Elevation	Ground Surface Elevation	Sample Pump Intake Depth	Dedicated Bladder Pump
			(ft NAVD88)	(ft NAVD88)	(ft BTOR)	(ft NAVD88)	(ft NAVD88)	(ft BTOR)	(Yes/No)
AOC 57 Sampling (Annual Sampling)									
57M-03-01X	Area 2 - Upgradient location.	LTM water level only.	214.70	224.70	12.40 - 22.40	237.10	234.70	--	--
57M-03-02X	Area 2 - On west fringe of remedial excavation.	LTM water level only.	212.50	222.50	3.80 - 13.80	226.30	224.50	--	NO
57M-03-03X	Area 2 - On southern fringe of remedial excavation and at wetland limit.	LTM water level only.	209.54	219.54	3.30 - 13.30	222.84	221.54	--	NO
57M-03-04X	Area 2 – On southern fringe of remedial excavation and at wetland limit.	LTM water level only.	209.42	219.42	3.80 - 13.80	223.22	221.42	--	NO
57M-03-05X	Area 2 - On southeastern fringe of remedial excavation and at wetland limit.	LTM water level only.	209.63	219.63	3.90 - 13.90	223.53	221.63	--	NO
57M-03-06X	Area 2 – On east fringe of remedial excavation.	LTM water level only.	210.26	220.26	3.50 - 13.50	223.76	222.26	--	--
57M-95-05X	Area 2 - West of and upgradient of excavation limit.	LTM water level only.	214.07	224.07	12.44 - 22.44	236.51	234.07	--	--
57M-95-06X	Area 2 – West of and cross gradient of excavation limit.	LTM water level only.	211.54	221.54	14.22 - 24.22	235.76	233.62	--	--
57M-95-07X	Area 2 – East of and cross gradient of excavation limit.	LTM water level only.	209.56	219.56	4.21 - 14.21	223.77	222.56	--	--
57WP-05-01	Area 2 – Southwest of Staff Gauge 01.	LTM water level only.	0 – 2 (g)	0 – 2 (g)	--	--	--	1.50 (a,g)	--
57WP-06-02	Area 2 - Adjacent to monitoring well 57M-03-03X.	LTM water level only.	19 – 24 (g)	19 – 24 (g)	20.0 - 25.0	222.11	--	21.50 (a,g)	--
57M-95-03X	Area 3 - Downgradient of source.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	214.68	224.68	9.49 - 19.49	234.17	231.68	15.30	NO
57M-96-10X	Area 3 – On west fringe of 1999 excavation area.	LTM water level only.	213.29	223.29	5.46 - 15.46	228.75	226.29	--	--
57M-96-11X	Area 3 – Downgradient well.	Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	209.38	219.38	4.20 - 14.20	223.58	221.38	9.20	NO
57M-96-12X	Area 3 – West of and cross gradient of excavation limit.	LTM water level only.	212.02	222.02	5.05 - 15.05	227.07	224.02	--	--
57M-96-13X	Area 3 - West of and cross gradient of excavation limit.	LTM water level only.	212.26	222.26	4.67 - 14.67	226.93	224.26	--	--
57P-98-03X	Area 3 – Southeast of monitoring well 57M-96-11X.	LTM water level only.	--	--	--	221.78	--	--	--
57P-98-04X	Area 3 - Southwest of monitoring well 57M-96-11X.	LTM water level only.	--	--	--	222.92	--	--	--
57WP-06-03	Area 3 – Adjacent to monitoring well 57M-96-11X.	LTM water level only.	201.89	206.89	15.0 – 20.0	221.89	--	--	--
SW-1	Area 3 – At downgradient fringe of excavation. Active seeps seem likely to be temporal.	Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	--	--	--	--	--	--	--
AOC 69W (Annual Sampling)									
69W-94-13	North of paved area near source area.	Source area well. Monitor for decrease in COC concentrations.	210.50 (a)	220.50 (a)	9.09 - 19.09	226.99	224.50	14.09	NO
69W-94-14	Approx. 30 feet upgradient of Willow Brook wetlands.	Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	211.73 (a)	221.73 (a)	5.49 - 15.49	227.22	224.73	11.09	NO
ZWM-95-15X	Near former underground concrete vault.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	209.14 (a)	219.14 (a)	8.74 - 18.74	225.01	222.14	13.74	NO
ZWM-95-18X	Approx. 120 feet downgradient of the concrete vault.	Sentry well. Monitor for off-site migration.	206.93 (a)	216.93 (a)	7.44 - 17.44	222.15	219.93	12.44	NO
ZWM-99-22X	Paved source area.	Replacement of destroyed well 69W-94-10. Monitor for decrease in COC concentrations.	212.09	222.09	4.66 - 14.66	226.72	226.89	9.66	NO
ZWM-99-23X	Downgradient well east of Willow Brook and northeast of 69W-94-14.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	210.40	220.40	6.63 - 16.63	225.08	223.40	9.63	NO

Table 1-5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
Main Post, Former Fort Devens Army Installation, Massachusetts

Monitoring Well/ Piezometer/ Surface Water ID	Location	Rationale	Bottom of Screen Interval	Top of Screen Interval	Well Screen Intervals	Top of Casing Elevation	Ground Surface Elevation	Sample Pump Intake Depth	Dedicated Bladder Pump
			(ft NAVD88)	(ft NAVD88)	(ft BTOR)	(ft NAVD88)	(ft NAVD88)	(ft BTOR)	(Yes/No)
AOC 69W (Annual Sampling) (continued)									
ZWM-99-24X	Downgradient well east of Willow Brook and southwest of 69W-94-14.	Sentry well. Monitor for decrease in COC concentration and decrease in the potential for off-site migration.	210.33	220.33	8.54 - 18.54	225.85	222.83	13.54	NO
ZWM-01-25X	Downgradient well northeast of ZWM-95-15X.	Sentry well.	208.58	218.58	6.13 - 16.13	224.71	222.58	11.13	NO
ZWM-95-17X	Southeast of school.	Background well. Water level and quality parameters only.	213.07 (a)	223.07 (a)	14.76 - 24.76	237.83	235.27	19.76	NO
ZWM-01-26X	Northeast of ZWM-99-23.	Sentry well. Water level and quality parameters only.	210.36	220.36	6.45 - 16.45	226.81	224.36	11.48	NO
ZWP-95-01X	Along Willow Brook, west of ZWM-99-24X.	LTM water level only.	211.63 (a)	213.63 (a)	12.41 - 14.41	226.04	223.63	--	--
ZWP-95-02X	West side of Willow Brook, northwest of ZWM-95-15X.	LTM water level only.	208.41 (a)	210.41 (a)	12.42 - 14.42	222.83	219.91	--	--
69W-94-12	East of 69W-94-13.	LTM water level only.	--	--	--	228.14	225.65	--	--
ZWM-95-16X	Southeast of ZWM-99-22X, near loading dock.	LTM water level only.	211.91 (a)	221.91 (a)	5.67 - 15.67	227.58	228.21	--	--
Willow Brook Piezometer	Approximately ¼ mile north of site along Willow Brook.	LTM water level only.	--	--	--	218.17	216.80	--	--
69WP-08-01	Downgradient of ZWM-01-25X.	Sentry well point for manganese delineation.	207.70	210.70	10.0 - 13.0 (g)	220.70	--	11.50 (g)	NO
69WP-13-01	Downgradient of 69WP-08-01.	Sentry well point for manganese delineation.	207.68 (e)	210.68 (e)	10.02-13.02 (g)	220.70 (e)	--	12.15 (g)	NO
AOC 43G (Annual Sampling)									
AAFES-2	East-southeast of former gasoline USTs.	Source well. Monitor intrinsic remediation.	268.70	283.70	18.30 - 33.30	301.72	299.90	25.80	NO
AAFES-5	East of former gasoline USTs.	LTM water level only.	269.90	284.90	15.22 - 30.22	299.80	300.40	--	NO
AAFES-6R	South of well XGM-93-02X.	LTM water level only.	269.80	279.80	16.97 - 26.97	298.74	296.77	--	NO
XGM-93-02X	South of former gasoline USTs.	Source well. Monitor intrinsic remediation.	271.80	281.80	28.00 - 39.00	309.01	309.80	33.00	NO
XGM-94-04X	Approx. 100 feet south of former gasoline USTs.	Sentry well. Monitor potential for off-site migration.	270.20	280.20	20.50 - 30.50	300.69	298.30	25.50	NO
XGM-94-06X	Supplemental SI location from KGS	Supplemental SI location from KGS	257.07	267.07	17 - 27	284.07			
XGM-94-07X	Approx. 180 feet east southeast of former gasoline USTs.	LTM water level only.	265.20	275.20	19.60 - 29.60	294.82	292.20	--	NO
XGM-94-08X	Approx. 230 feet southeast of former gasoline USTs.	LTM water level only.	262.90	272.90	26.10 - 36.10	298.98	296.40	--	NO
XGM-94-10X	Approx. 250 feet south of former gasoline USTs.	LTM water level only.	268.10	278.10	23.80 - 33.80	301.96	299.60	--	NO
XGM-97-12X	At location of former gasoline USTs.	Source well. Monitor intrinsic remediation.	274.83	284.83	24.00 - 34.00 (g)	308.70	--	29.00 (a,g)	NO
AAFES-7	Approx. 620 feet southeast of former gasoline USTs.	Monitor potential for manganese off-site migration.	242.01	252.01	6.70 -16.70	257.77	256.10	11.70	NO

Table 1-5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
Main Post, Former Fort Devens Army Installation, Massachusetts

Monitoring Well/ Piezometer/ Surface Water ID	Location	Rationale	Bottom of Screen Interval	Top of Screen Interval	Well Screen Intervals	Top of Casing Elevation	Ground Surface Elevation	Sample Pump Intake Depth	Dedicated Bladder Pump
			(ft NAVD88)	(ft NAVD88)	(ft BTOR)	(ft NAVD88)	(ft NAVD88)	(ft BTOR)	(Yes/No)
AOCs 32 and 43A (Annual Sampling)									
32M-92-01X	North of the building on west edge of former Tire Recycling Yard.	LTM water level only.	233.90	243.90	16.23 - 26.23	260.17	257.60	--	--
32M-92-03X	West of the building and just north of former DRMO Warehouse.	LTM water level only.	225.00	235.00	25.19 - 35.19	260.02	258.00	--	--
32Z-99-02X (32M-92-02X)	East of the building.	LTM water level only.	228.10	243.10	16.89 - 31.89	259.99	257.60	--	--
32Z-01-05XOB	Western end of parking lot to the south of the building.	LTM water level only.	225.50	235.50	25.10 - 35.10	260.60	261.00	--	--
32Z-01-06XBR	In vegetation north of northeast corner of the building.	LTM water level only.	233.30	243.30	18.60 - 28.60	261.85	260.00	--	--
32Z-01-07XOB	North of the building on southeast corner of former Tire Recycling Yard.	LTM water level only.	234.50	244.50	15.01 - 25.01	259.48	257.20	--	--
32Z-01-08XOB	Slightly northwest of the building.	LTM water level only.	236.00	246.00	14.53 - 24.53	260.49	258.00	--	--
32Z-01-09XOB	Western edge of parking lot near southwest corner of the building.	LTM water level only.	224.30	234.30	23.07 - 33.07	257.37	257.80	--	--
32Z-01-10XBR	In paved access road east of the building.	LTM water level only.	235.30	245.30	12.12 - 22.12	257.41	257.82	--	--
32Z-01-11XBR	In paved access road north of the building.	LTM water level only.	243.00	253.00	8.42 - 18.42	261.50	262.04	--	--
32Z-01-12XBR	In paved access road just north of truck bays on west side of the building.	LTM water level only.	220.10	230.10	27.78 - 37.78	257.85	258.28	--	--
SHL-15	North of the building on north edge of former Tire Recycling Yard.	LTM water level only.	233.20	243.20	16.30 - 26.30 (m)	259.92	258.20	--	--
SHL-25	Outside of perimeter fence on east side of the building; adjacent to well 32M-01-17XBR.	LTM water level only.	223.30	233.30	25.00 - 35.00 (m)	258.01	256.30	--	--
32M-01-13XBR	Between truck bays 33 and 34 on east side of the building.	Source area well.	234.60	244.60	13.25 - 23.25	257.88	258.27	18.25	YES (Broken)
32M-01-14XOB	Outside of perimeter fence northeast of 32M-01-13XBR.	Downgradient well.	227.10	237.10	19.52 - 29.52	256.56	254.40	24.52	YES
32M-01-14XBR	Outside of perimeter fence northeast of 32M-01- 13XBR.	LTM water level only.	210.30	220.30	35.81 - 45.81	256.06	254.30	43.81	YES
32M-01-15XBR	Southeast of 32M-01-13XBR in paved access road on east side of the building.	LTM water level only.	213.40	223.40	34.16 - 44.16	257.70	257.91	43.00	NO
32M-01-16XBR	Opposite from bay 20 on east side of the building.	LTM water level only.	226.70	236.70	20.79 - 30.79	257.50	257.72	29.00	NO
32M-01-17XBR (32M-01-17X)	Just inside perimeter fence on east side of the building.	Downgradient well.	204.90	214.90	43.79 - 53.79	258.69	256.30	48.79	YES
32M-01-18XBR	Just east of the building at truck bay 29.	Source area well.	234.60	244.60	13.74 - 23.74	258.32	258.63	18.74	NO
43M-01-16XOB	Opposite door B5 on west side of the building.	LTM water level only.	223.10	233.10	23.75 - 33.75	256.88	257.12	--	--
43M-01-16XBR	Opposite door B5 on west side of the building.	LTM water level only.	199.50	209.50	47.27 - 57.27	256.84	257.04	--	--
43M-01-17XOB	Near door B4 on west side of the building.	LTM water level only.	225.10	235.10	22.97 - 32.97	258.08	258.57	--	--
43M-01-17XBR	Near door B4 on west side of the building.	LTM water level only.	201.00	211.00	47.25 - 57.25	258.29	258.54	--	--
43M-01-20XOB	Western edge of paved access road on west side of the building.	LTM water level only.	223.90	233.90	23.76 - 33.76	257.40	257.86	--	--
43M-01-20XBR	Western edge of paved access road on west side of the building.	LTM water level only.	179.60	189.60	67.71 - 77.71	257.30	257.86	--	--

Table 1-5
Monitoring Wells, Well Points, Piezometers, and Surface Water Locations Selected for Long-Term Monitoring
Main Post, Former Fort Devens Army Installation, Massachusetts

Monitoring Well/ Piezometer/ Surface Water ID	Location	Rationale	Bottom of Screen Interval	Top of Screen Interval	Well Screen Intervals	Top of Casing Elevation	Ground Surface Elevation	Sample Pump Intake Depth	Dedicated Bladder Pump
			(ft NAVD88)	(ft NAVD88)	(ft BTOR)	(ft NAVD88)	(ft NAVD88)	(ft BTOR)	(Yes/No)
Devens									
LFM-99-01B	West edge of property between landfill and Queenstown St.	LTM water level only.	316.60	325.90	24.77 - 34.07	350.67	326.20	--	--
LFM-99-02B	Southwest edge of property near intersection of Queenstown St. and Patton Rd.	Monitor for changes in downgradient conditions.	327.33	337.33	16.50 - 26.50	353.83	353.03	21.50	NO
LFM-99-03B	Northern edge of property.	LTM water level only.	292.20	301.50	40.58 - 49.88	342.08	341.28	--	--
LFM-99-05A	Near northeast toe of landfill.	Monitor for changes in downgradient conditions.	285.88	295.88	20.70 - 30.70	316.58	315.78	25.70	NO
LFM-99-05B	Near northeast toe of landfill.	LTM water level only.	259.10	263.40	53.18 - 57.48	316.58	315.78	--	--
LFM-99-06ARP	East of landfill and south of LFM-03-07.	Monitor for changes in downgradient conditions.	302.64	317.64	20.20 - 35.20	337.84	337.04	27.70	NO
LFM-03-07	East of the landfill and south of the channel to the collection pond.	Monitor for changes in downgradient conditions.	294.24	304.24	10.90 - 20.90 (g)	315.14	315.68	18.95 (g)	NO

Notes:
NGVD = National Geodetic Vertical Datum (converted to 1988)
(a) = approximate
(e) = estimated
(g) = feet below ground surface
(m) = depth from metal casing
NA = Not available
bgs = below ground surface
ft = feet
TOR = top of riser
ft BTOR = feet below top of riser

Table 1-6
AOC - Specific Action Levels
Main Post, Former Fort Devens Army Installation, Massachusetts

Chemical of Concern	MCP GW-1[1] (µg/L)	Background[2] (µg/L)	MCL [3] (µg/L)	Cleanup Goal [4] (µg/L)	Monitoring Criteria[4] (µg/L)
AOC 57 Area 3 - Building 3713 Fuel Oil Spill Site					
Arsenic	10	10.5	10	10	NS
AOC 69W - Fort Devens Elementary School Fuel Oil Spill Site					
Arsenic	10	10.5	10	10	NS
Iron	NS	9,100	NS	NS	9,100
Manganese	NS	291	NS	NS	375[6]
EPH [5]					
C9-C18 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C19-C36 Aliphatic Hydrocarbons	14,000	NS	NS	NS	14,000
C11-C22 Aromatic Hydrocarbons	200	NS	NS	NS	200
AOC 43G - Historical Gas Station Motor Pool Fueling Station Site					
Iron	NS	9,100	NS	9,100	NS
Manganese	NS	291	NS	375[6]	NS
VOCs					
Benzene	5.0	ND	5.0	5.0	NS
Toluene	1,000	ND	1,000	1,000	NS
Ethylbenzene	700	ND	700	700	NS
Xylenes (total)	10,000	ND	10,000	10,000	NS
VPH [5]					
C5-C8 Aliphatic Hydrocarbons	300	NS	NS	NS	300
C9-C12 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C9-C10 Aromatic Hydrocarbons	200	NS	NS	NS	200
AOCs 32 and 43A - Former POL Storage Area					
Arsenic	10	10.5	10	10	NS
Manganese	NS	3,500	NS	3,500	NS
VOCs					
Vinyl Chloride	2.0	NS	2.0	2.0	NS
1,2-dichloroethene (trans)	100	NS	100	100	NS
1,2-dichloroethene (cis)	55	NS	70	55	NS
1,1,1-trichloroethane	200	NS	200	NS	5.0
Trichloroethene	5.0	NS	5.0	5.0	NS
1,2-dichlorobenzene	600	NS	600	600	NS
1,3-dichlorobenzene	100	NS	NS	600	NS
1,4-dichlorobenzene	5.0	NS	75	5.0	NS
VPH [5]					
Benzene	5.0	NS	5.0	NS	5.0
Ethylbenzene	700	NS	700	NS	700
Xylenes, total	10,000	NS	10,000	NS	10,000
Toluene	1,000	NS	1,000	NS	1,000
Chlorobenzene	100	NS	100	NS	100
C5-C8 Aliphatic Hydrocarbons	300	NS	NS	NS	300
C9-C12 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C9-C10 Aromatic Hydrocarbons	200	NS	NS	NS	200
EPH [5]					
C9-C18 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C19-C36 Aliphatic Hydrocarbons	14,000	NS	NS	NS	5,000
C11-C22 Aromatic Hydrocarbons	200	NS	NS	NS	200

Table 1-6
AOC - Specific Action Levels
Main Post, Former Fort Devens Army Installation, Massachusetts

Chemical of Concern	MCP GW-1[1] (µg/L)	Background[2] (µg/L)	MCL [3] (µg/L)	Cleanup Goal [4] (µg/L)	Monitoring Criteria[4] (µg/L)
Devens Consolidation Landfill (DCL) - Landfilling Waste From SAs and AOCs					
VPH [5]					
C5-C8 Aliphatic Hydrocarbons	300	NS	NS	NS	300
C9-C12 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C9-C10 Aromatic Hydrocarbons	200	NS	NS	NS	200
Methyl tert-butyl ether	70	NS	NS	NS	70
Benzene	5.0	NS	5.0	NS	5.0
Toluene	1,000	NS	1,000	NS	1,000
Ethylbenzene	700	NS	700	NS	700
Xylenes, total	10,000	NS	10,000	NS	10,000
Naphthalene	140	NS	NS	NS	140
EPH [5]					
C9-C18 Aliphatic Hydrocarbons	700	NS	NS	NS	700
C19-C36 Aliphatic Hydrocarbons	5,000	NS	NS	NS	5,000
C11-C22 Aromatic Hydrocarbons	200	NS	NS	NS	200
Target PAH Analytes					
2-Methylnaphthalene	10	NS	NS	NS	10
Acenaphthene	20	NS	NS	NS	20
Acenaphthylene	30	NS	NS	NS	30
Anthracene	60	NS	NS	NS	60
Benzo(a)anthracene	1.0	NS	NS	NS	1.0
Benzo(a)pyrene	0.20	NS	0.2	NS	0.2
Benzo(b)fluoranthene	1.0	NS	NS	NS	1.0
Benzo(g,h,i)perylene	50	NS	NS	NS	50
Benzo(k)fluoranthene	1.0	NS	NS	NS	1.0
Chrysene	2.0	NS	NS	NS	2.0
Dibenzo(a,h)anthracene	0.50	NS	NS	NS	0.50
Fluoranthene	90	NS	NS	NS	90
Fluorene	30	NS	NS	NS	30
Indeno(1,2,3-cd)pyrene	0.50	NS	NS	NS	0.50
Naphthalene	140	NS	NS	NS	140
Phenanthrene	40	NS	NS	NS	40
Pyrene	60	NS	NS	NS	60
Pesticides					
Hexachlorobenzene	1.0	NS	1.0	NS	1.0
4,4'-DDD (p,p'-DDD)	0.20	NS	NS	NS	0.20
4,4'-DDE (p,p'-DDE)	0.05	NS	NS	NS	0.05
4,4'-DDT (p,p'-DDT)	0.30	NS	NS	NS	0.3
Aldrin	0.50	NS	NS	NS	0.5
alpha-BHC	500	NS	NS	NS	500
beta-BHC	2.0	NS	NS	NS	2.0
delta-BHC	100	NS	NS	NS	100
Dieldrin	0.10	NS	NS	NS	0.10
Endosulfan	10	NS	NS	NS	10
Endrin	2.0	NS	2.0	NS	2.0
Gamma-BHC (Lindane)	0.20	NS	0.20	NS	0.20
Heptachlor	0.40	NS	0.40	NS	0.40

Table 1-6
AOC - Specific Action Levels
Main Post, Former Fort Devens Army Installation, Massachusetts

Chemical of Concern	MCP GW-1[1] (µg/L)	Background[2] (µg/L)	MCL [3] (µg/L)	Cleanup Goal [4] (µg/L)	Monitoring Criteria[4] (µg/L)
Heptachlor epoxide	0.20	NS	0.20	NS	0.20
Methoxychlor	40	NS	40	NS	40
Total Chlordane	2.0	NS	2.0	NS	2.0
Toxaphene	100	NS	3.0	NS	100
Metals					
Arsenic	10	NS	10	NS	10
Barium	2,000	NS	2,000	NS	2,000
Cadmium	5.0	NS	5.0	NS	5.0
Chromium	100	NS	100	NS	100
Copper	NS	NS	1,300	NS	1,300
Iron	NS	NS	NS	NS	NS
Lead	15	NS	15	NS	15
Manganese	NS	NS	NS	NS	NS
Silver	100	NS	NS	NS	100
Selenium	50	NS	50	NS	50
Mercury	2.0	NS	2.0	NS	2.0
Wet Chemistry					
Solids, Total Dissolved	NS	NS	NS	NS	500,000
Anions					
Chloride	NS	NS	NS	NS	250,000
Sulfate	NS	NS	NS	NS	250,000
Nitrate/Nitrite					
Nitrate/Nitrite (as N)	NS	NS	10,000	NS	10,000
Alkalinity, Total					
As CaCO3	NS	NS	NS	NS	NS
Cyanide					
Cyanide, total	200	NS	200	NS	200
COD					
Chemical Oxygen Demand	NS	NS	NS	NS	NS

Notes:

[1]MassDEP MCL GW-1 Standards: 310.CMR 40.0000, 2014.

[2]Background concentrations determined from selected locations in each AOC.

[3]Drinking Water Standards and Health Advisories", Spring 2012, USEPA Office of Water.

[4]Clean up goals were established by respecitve AOC RODs; Monitoirng Criteria are used if the ROD did not include cleanup goals for listed analytes.

[5]EPH and VPH concentrations are evaluated against MCP standards for comparison purposes, but the standards are not considered cleanup goals under the ROD.

[6] Risk based concentration.

NS = No standard.

MCL = Maximum Contaminant Level.

Table 1-7
DCL Leachate Discharge Permit No.17 Limits
Main Post, Former Fort Devens Army Installation, Massachusetts

Analytical Fraction	Parameter	Discharge Limitation (mg/L)*
Metals Composite	Arsenic	0.20
	Chromium (total)	0.40
	Cadmium	0.045
	Copper	0.75
	Lead	0.20
	Nickel	0.60
	Silver	0.30
	Zinc	0.70
	Mercury	0.001
TSS	Total Suspended Solids	400
TTO	Total Toxic Organics	5.0
pH	pH (units)	5.5 - 9.5
Cyanide	Cyanide (Total)	NL
TPH	Total Petroleum Hydrocarbons	NL
Heptachlor-Pesticide		NL
Phenolics		NL

Notes:
* = Discharge Limit from Industrial Wastewater Permit No. 17
mg/L = milligrams per liter
NL = No limit; for monitoring purposes only
TTO = Total Organics (Sum of VOC's, SVOC's, Pesticides and PCB's)
VOCs = Volatile Organic Compounds
SVOCs = Semi Volatile Organic Compounds
PCBs = Polychlorinated Biphenyls

Table 2-1
AOC 57 Area 3 Groundwater Analytical Results, Spring 2019
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal[1]	Background[2]	57M-95-03X		57M-96-11X		DUP-1 57M-96-11X	
				4/8/2019	Q	4/8/2019	Q	4/8/2019	Q
Total Metals									
Arsenic, Total	µg/L	10	10.5	**15**		**100**		**110**	
Iron, Total	µg/L	NS	9,100	**5,600**		***36,000***		***38,000***	
Manganese, Total	µg/L	NS	291	**160**		***3,000***		***3,100***	
Field Parameters									
Temperature	°C	NS	NS	**6.6**		**6.9**		**--**	
ORP	mV	NS	NS	**6.0**		**8.0**		**--**	
pH	Std Units	NS	NS	**6.2**		**6.1**		**--**	
Specific Conductance	µS/cm	NS	NS	**270**		**1,000**		**--**	
Dissolved Oxygen	mg/L	NS	NS	**0.60**		**0.85**		**--**	
Turbidity	NTU	NS	NS	**7.0**		**29**		**--**	

Notes:

0.333	= Detection
0.333	= Above background or monitoring criteria
0.333	= Above cleanup goal

µg/L = microgram per liter
mg/L = milligram per liter
NS = No Standard
Q = Qualifier
J = Estimated result
U = Non-detect
[1] Cleanup Goal for arsenic is the MCL standard.
[2] From the RI. (Final Remediation Investigation Report, Area of Contamination (AOC) 57, Devens, Massachusetts, HLA, 2000b)
-- Not recorded for duplicate sample

Table 2-2
AOC 57 Area 3 Surface Water Analytical Results, Spring 2019
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Surface Water Benchmark[1]	57-SW1		DUP 57-SW1	
			4/5/2019	Q	4/5/2019	Q
Dissolved Metals						
Arsenic, Dissolved	µg/L	150	3.0	U	3.0	U
Iron, Dissolved	µg/L	1,000	**760**		**600**	
Manganese, Dissolved	µg/L	NS	**110**		**100**	
Field Parameters						
ORP	mV	NS	--		--	
pH	Std Units	NS	--		--	
Specific Conductance	µS/cm	NS	--		--	
Dissolved Oxygen	mg/L	NS	--		--	
Temperature	°C	NS	--		--	
Turbidity	NTU	NS	--		--	

Notes:

0.333	= Detection
0.333	= Above background or monitoring criteria

µg/L = microgram per liter

mg/L = milligram per liter

NS = No Standard

Q = Qualifier

J = Estimated result

U = Non-detect

-- Not recorded for surface water

[1] USEPA Aquatic Life Water Quality Criterion for Surface Water benchmarks for iron and arsenic (USEPA, 2018).

Table 2-3
Summary of Historical Groundwater and Surface Water Cleanup Goal Exceedances at AOC 57 Area 3 Since 2003
Main Post, Former Fort Devens Army Installation, Massachusetts

Sample Location	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005	Spring 2006	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Spring 2009	Spring 2010	Spring 2011	Spring 2012	Spring 2013	Spring 2014	Spring 2015	Spring 2016	Spring 2017	Spring 2018	Spring 2019
Groundwater																					
Arsenic (Total) - 10 µg/L Cleanup Goal																					
57M-95-03X	**36**	**44**	**230**	**25**	**13.6**	**7.0**	**49.0**	**4.8**	**51.0**	**23.0**	**21.0**	**23.0**	**58.0**	**36.0**	**60.0**	**60.0**	**37.5**	**31.0**	**27**	**42**	**15**
57M-96-11X	**270**	**240**	**120**	**161**	**215**	**163**	**171**	**166**	**193**	**160**	**163**	**148**	**190**	**192**	**181**	**160**	**284**	**290**	**180**	**180**	**100**
1,4-Dichlorobenzene - 5 µg/L Cleanup Goal																					
57M-95-03X	**1.4**	**2.2**	**13**	**0.5**	**0.8**	**1.4**	**4.5**	**1.4**	**13**	**0.9**	**2.4 J**	**1.4 J**	**5.1**	**2.4 J**	**3.13**	**3.27**	NA	NA	NA	NA	NA
57M-96-11X	**3.4**	**3.8**	**2.4**	**3.3**	**1.4**	**3.7**	**2.4**	**4.4**	**1.6**	**5.1**	**7.5**	**2.1 J**	**2.3 J**	**0.92 J**	**1.05 J**	**1.22**	NA	NA	NA	NA	NA
Surface Water																					
Arsenic - 150 µg/L Water Quality Criterion																					
57-AREA 3-SW-1	**35**	**3.1 J**	**4.9J**	ND	**5.2**	**34 J**	**6**	**2.7 J**	**9**	**11**	ND	ND	**18**	**8.0**	**8.0**	ND	**9.9**	**23**	**31**	**5**	ND
Iron - 1,000 µg/L Water Quality Criterion																					
57-AREA 3-SW-1	NA	NA	NA	NA	NA	**600**	***4,500***	**520**	***7,100***	***6,800***	***2,500***	**240**	***20,000***	***8,300***	***10,000***	***10,000***	***4,140***	***19,000***	***21,000***	***4,000***	**760**
Lead - 2.5 µg/L Water Quality Criterion																					
57-AREA 3-SW-1	***34***	ND	**0.81**	***3.4***	ND	**2.3**	ND	**1.8**	***14***	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

0.333	= Detection
0.333	= Above background or monitoring criteria
0.333	= Above cleanup goal

J = Estimated result
NA = Not analyzed
ND = non-detect
NS = No Standard
µg/L = microgram per liter

Table 3-1
AOC 69W Groundwater Analytical Results, October 2019
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal[1]	Monitoring Criteria[2]	69W-94-13		69W-94-14		ZWM-95-15X		ZWM-95-18X		ZWM-99-22X		69W-DUP1 ZWM-99-22X		ZWM-99-23X		ZWM-99-24X		ZWM-01-25X		69WP-08-01		69WP-13-01	
				10/3/2019	Q	10/4/2019	Q	10/4/2019	Q	10/2/2019	Q	10/3/2019	Q	10/3/2019	Q	10/3/2019	Q	10/3/2019	Q	10/2/2019	Q	10/3/2019	Q	10/3/2019	Q
Metals (SW6010B)																									
Arsenic (dissolved)	µg/L	10	NS	**70**		3.0	U	**17**		3.0	U	**150**		**140**		**24**		**1.9**	J	3.0	U	3.0	U	NA	
Iron (dissolved)	µg/L	NS	9,100	**7,400**		50	U	**2,300**		1,400		***10,000***		***9,800***		**3,500**		**390**		**230**		**7,600**		NA	
Manganese (dissolved)	µg/L	NS	291	***1,600***		***1,200***		***690***	J	**66**		***1,100***		***1,100***		***770***		**67**		***6,200***		***1,300***		**88**	
EPH[3] (MADEP)																									
C_9-C_{18} Aliphatics	µg/L	NS	700	**76**	J	74	U	74	U	77	U	**65**	J	74	U	73	U	73	U	76	UJ	NA		NA	
C_{19}-C_{36} Aliphatics	µg/L	NS	14,000	**100**	J	74	U	74	U	77	U	**130**	J	**120**		**120**		73	U	76	UJ	NA		NA	
C_{11}-C_{22} Aromatics	µg/L	NS	200	**77**	J	74	U	74	U	77	U	***220***		***230***		73	U	73	U	76	U	NA		NA	
Field Parameters																									
Temperature	°Celsius	NS	NS	18		16		14		15		19		19		16		15		NA		14		11	
pH	Std units	NS	NS	6.6		5.7		5.8		5.9		6.3		6.3		6.3		5.8		NA		6.4		6.3	
Specific Conductance	µS/cm	NS	NS	24		2,000		1,300		1,200		1,200		1,200		1,200		590		NA		1,100		1,100	
ORP/Eh	mV	NS	NS	-26		88		54		200		-27		-27		6.5		92		NA		-19		-17	
Dissolved Oxygen	mg/L	NS	NS	0.16		0.62		0.42		7.7		0.39		0.39		0.31		0.78		NA		0.35		0.46	
Turbidity	NTU	NS	NS	6.5		4.9		13		0.43		3.9		3.9		2.4		1.7		NA		29		24	

Notes:

0.333	= Detection
0.333	= Above background or monitoring criteria
0.333	= Above cleanup goal

J = Estimated result
NA = Not analyzed
NS = No Standard
Q = Qualifier
U = Non-detect
UJ = Estimated non-detect because of QC outliers.
µg/L = microgram per liter
[1] Cleanup Goal for arsenic is the MCL standard.
[2] Monitoring criteria for iron and manganese are background levels from the RI (Final Remediation Investigation Report, Area of Contamination (AOC) 57, Devens, Massachusetts, HLA, 2000b).
[3] EPH MADEP concentrations are evaluated against Massachusetts Contingency Plan standards for comparison purposes.

Table 3-2
Summary of Historical Groundwater Cleanup Goal Exceedances at AOC 69W
Main Post, Former Fort Devens Army Installation, Massachusetts

Sample Location	Spring 2000	Fall 2000	Spring 2001	Fall 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004	Fall 2004	Spring 2005	Fall 2005	Spring 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019
Arsenic, dissolved - 10 µg/l Cleanup Goal																										
69W-94-13	**54**	**110**	**85**	**150**	**52**	**130**	**35**	**69**	**27**	**88**	**56**	**60**	**69**	**142**	**73**	**86**	**127**	**120**	**115**	**73**	**101**	**120**	**76**	**24**	**35**	**70**
ZWM-95-15X	ND	**7.9**	ND	**22**	**36**	**40**	ND	**16**	**7.7**	**30**	ND	ND	ND	**16**	ND	ND	**13**	**41**	**23**	**17**	**30.2**	**19.3**	**3.7**	**10**	**18**	**17**
ZWM-99-22X	**150**	**130**	**230**	**140**	**86**	**140**	**150**	**160**	**140**	**140**	**120**	**120**	**159**	**244**	**223**	**408**	**343**	**367**	**299**	**233 J**	**172**	**125**	**150**	**190**	**150**	**150**
ZWM-99-23X	**23**	**70**	**67**	**55**	**15**	ND	**27**	ND	**44**	**61**	**46**	**47**	**56**	**56**	**52**	**62**	**15**	**60**	**29**	**27**	**19.5**	**13.9**	**7.7**	**17**	**39**	**24**
ZWM-01-25X	NA	NA	NA	**4.1 J**	ND	ND	**2.3 J**	ND	ND	**3.4 J**	ND	ND	**3 J**	**5**	**2.3 J**	**2 J**	ND	**13**	**19**	**5**	ND	ND	ND	**4.5**	NA	ND
Manganese, dissolved - 291 µg/l Monitoring Criteria																										
69WP-08-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**174**	**89**	**78**	***2,190***	***904***	**237**	**64.5**	**78.4**	**79**	**33**	**35**	***1,300***
69W-94-13	***2,300***	***1,700***	***1,500***	***1,600***	***2,100***	***2,400***	***2,800***	***4,100***	***2,500***	***1,300***	***3,000***	***1,600***	***2,600***	***1,120***	***1,940***	***2,110***	***1,360***	***1,840***	***1,400***	***1,730***	***1,940***	***2,050***	***2,600***	***320***	***1,600***	***1,600***
ZWM-95-15X	**28**	***1,300***	**25**	**100**	***1,500***	***2,200***	***1,600***	***970***	***4,600***	***980***	***850***	**130**	***860***	***1,230***	***438***	***502***	***1,120***	***1,010***	***1,580***	***1,280***	***900***	***843***	**17**	**220**	***340***	***690 J***
ZWM-99-22X	***2,000***	***1,800***	***2,300***	***2,400***	***2,000***	***1,500***	***2,700***	***2,300***	***3,100***	***1,900***	***3,400***	***3,200***	***3,700***	***3,120***	***3,790***	***2,660***	***1,750***	***2,160***	***1,120***	***998***	***1,280***	***1,440***	***960***	***1,200***	***1,500***	***1,100***
ZWM-99-23X	***4,200***	***3,600***	***5,800***	***1,500***	***550***	***1,700***	***5,300***	***4,300***	***2,500***	***2,300***	***5,200***	***2,500***	***2,700***	***1,320***	***2,500***	***3,080***	***523***	***1,720***	***500***	***556***	***533***	***749***	***590***	***1,800***	***1,600***	***770***
ZWM-01-25X	NA	NA	NA	**280**	**61**	***1,000***	**89**	**230**	**140**	***300***	**140**	***490***	***1,400***	***3,210***	***1,320***	***5,830***	***1,490***	***2,820***	***2,540***	***1,570***	***435***	***859***	**78**	***590***	NA	***6,200***
EPH C_{11}-C_{22} Aromatics - 200 µg/l Monitoring Criteria																										
69W-94-13	***690***	***1,400***	***720***	***790***	***1,900***	***290***	ND	**160**	ND	**110**	ND	ND	***209***	***311***	**152**	***225***	***339***	***242***	***379***	***227***	***252***	**175**	***410***	ND	**98**	**77 J**
ZWM-95-15X	ND	ND	ND	ND	**1,400**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	**100**	ND	ND	ND
ZWM-99-22X	***2,500***	***1,400***	***2,100***	***370***	***620***	***210***	***380***	***330***	***270***	***400***	***320***	***280***	***627***	**166**	***356***	***276***	***209***	***327***	***308***	***286***	***332***	***354***	***210***	**170**	***230***	***220***
ZWM-99-23X	**170**	***520***	***200***	**140**	**140**	ND	ND	ND	ND	ND	ND	ND	**174**	**107**	**80**	ND	ND	ND	ND	ND	ND	ND	**110**	ND	**130**	ND
EPH C_{9}-C_{18} Aromatics - 700 µg/l Monitoring Criteria																										
69W-94-13	**120**	**270**	**160**	**320**	**150**	**200**	**62**	**140**	**130**	**230**	**110**	**140**	**84**	**144**	**81**	**105**	**142**	**66.7**	**63 J**	**87.6**	NA	NA	NA	NA	NA	**76 J**
ZWM-99-22X	**620**	**150**	**550**	**83**	**88**	**150**	***840***	**450**	**650**	**600**	**460**	**460**	**330**	**113**	**217**	**120**	**76.4**	**114**	**55.5 J**	**119**	NA	NA	NA	NA	NA	**65 J**
ZWM-99-23X	**46**	**62**	**40**	**34**	ND	ND	**53**	**59**	ND	ND	**100**	ND	ND	ND	**28**	**35.2**	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND

Notes:

0.333	= Detection
0.333	= Above background or monitoring criteria
0.333	= Above cleanup goal

J = Estimated result

NA = Not analyzed

ND = non-detect

µg/L = microgram per liter

Table 4-1
AOC 43G Groundwater Analytical Results - October 2019
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal[1]	Monitoring Criteria[2]	XGM-94-04X		AAFES-2		AAFES-7		XGM-93-02X		XGM-97-12X		XGM-DUP1 XGM-97-12X		XGM-94-06X		XGM-94-07X		XGM-94-08X	
				10/2/2019	Q	10/2/2019	Q	10/14/2019	Q	10/9/2019	Q	10/9/2019	Q	10/9/2019	Q	10/14/2019	Q	10/14/2019	Q	10/14/2019	Q
Total Metals (Select List)																					
Arsenic, Total	µg/L	NS	10	**8.1**		**42**		3.0	U	**5.2**		**18**		**23**		**---**		**---**		**---**	
Iron, Total	µg/L	9,100	9,100	**3,200**		**20,000**		110		**9,300**		**6,200**		**6,500**		**5,500**		**8,300**		**1,000**	
Manganese, Total	µg/L	375	291	**5,500**		**3,500**		**86**		**1,300**		**250**		**260**		**1,400**		**4,200**		**3,500**	
MassDEP Volatile Petroleum Hydrocarbons (VPH)																					
C_5-C_8 Aliphatics[3]	µg/L	NS	300	***590***		***1,200***		---		**210**		***350***		***360***		---		---		---	
C_9-C_{10} Aromatics[3]	µg/L	NS	200	***830***		***1,400***		---		**100**		***340***		***340***		---		---		---	
C_9-C_{12} Aliphatics[3]	µg/L	NS	700	**270**	J	***790***		---		79	J	**150**	**J**	**160**	J	---		---		---	
Methyl tert-butyl ether	µg/L	NS	NS	**8.1**		**5.6**		---		**2.2**	J	3.8	U	3.8	U	---		---		---	
Benzene	µg/L	5.0	NS	**2.4**	J	**1.5**	J	---		2.0	U	2.0	U	2.0	U	---		---		---	
Ethylbenzene	µg/L	700	NS	**27**		**25**		---		3.8	U	**2.1**	J	**2.7**	J	**---**		**---**		**---**	
Naphthalene	µg/L	NS	NS	**10**		**21**		---		3.8	U	**11**		**13**		---		---		---	
m,p -Xylene	µg/L	10,000	NS	**3.2**	J	**5.2**	J	---		7.5	U	**10**		**13**		---		---		---	
o -Xylene	µg/L	10,000	NS	**3.6**	J	**6.5**		---		3.8	U	**1.6**	J	**1.7**	J	---		---		---	
Toluene	µg/L	1,000	NS	**1.8**	J	**4.4**	J	---		**0.92**	J	**1.6**	J	**1.7**	J	---		---		---	
General Chemistry																					
Alkalinity, Total	mg/L	NS	NS	**170**		**150**		---		**170**		**66**		**66**		**---**		**---**		**---**	
Field Parameters																					
Temperature	°Celsius	NS	NS	14		14		14		13		15		15		14		17		15	
pH	Std units	NS	NS	7.1		6.8		6.3		6.6		6.3		6.3		6.8		6.8		6.6	
Specific Conductance	µS/cm	NS	NS	2,000		1,900		2,300		2,300		280		280		1,700		2,700		1,800	
ORP	mV	NS	NS	-78		-57		170		-45		-2.9		-2.9		-6.6		-19		50	
Dissolved Oxygen	mg/L	NS	NS	0.20		2.6		5.6		0.39		0.38		0.38		0.87		0.050		0.22	
Turbidity	NTU	NS	NS	1.4		8.1		3.6		15		5.4		5.4		2.5		9.7		8.3	

Notes:

0.333	= Detection	µg/L = microgram per liter	J = Estimated result
0.333	= Above background or monitoring criteria	mg/L = milligram per liter	U = Non-detect
0.333	= Above cleanup goal	NS = No Standard	-- = Not analyzed
		Q = Qualifier	

[1]The cleanup goal for iron is the background level. The cleanup goal for manganese is a site-specific goal determined in 2008 (Long-Term Monitoring Plan Former Fort Devens Army Installation, HGL, 2008). Benzene, ethylbenzene, xylenes, and toluene are not contaminants of concern but the cleanup goals are the Maximum Contaminant Levels (MCLs).

[2] The monitoring criteria for iron and manganese is the background from the RI (Final Remedial Investigation Report Area of Contamination (AOC) 43G, ABB Environmental Services, Inc., 1996). The monitoring criterion for arsenic is the MCL.

[3]The VPH carbon ranges are not contaminants of concern and are evaluated against Massachusetts Contingency Plan GW-1 standards for comparison purposes.

Table 4-2
AOC 43G Groundwater Exceedances Since 1999
Main Post, Former Fort Devens Army Installation, Massachusetts

Sample Location	Fall 1999	Fall 2000	Fall 2001	Fall 2002	Fall 2003	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019
Benzene- 5 µg/L Cleanup Goal																					
AAFES-2	**62**	**36**	**43**	**26**	**9.0**	**6.6**	**6.1**	**1.3**	ND	ND	**3.93 J**	ND	ND	**6.60 J**	**5.04**	**3.7**	**4.2**	ND	ND	ND	**1.5 J**
XGM-93-02X	**81**	**32**	**12**	**140**	**24**	**39**	**29**	**18.5**	**8.8**	**2.6**	**0.997 J**	ND	ND	ND	ND	**0.77 J**	ND	ND	**0.38 J**	**0.60 J**	ND
XGM-97-12X	**270**	**550**	**700**	**780**	**290**	**260**	**35.6**	**129**	**22.8**	**13.7 J**	**27.4 J**	ND	**13.8**	**3.03 J**	**3.87**	**1.5**	**3.8**	ND	ND	**4.0**	ND
Toluene- 1,000 µg/L Cleanup Goal																					
XGM-97-12X	**390**	**1,100**	**870**	**1,000**	**610**	**460**	**53.4**	**239**	**15.9**	**11.4 J**	**5.3 J**	ND	ND	ND	**2.54**	ND	**7.4**	ND	ND	**5.1**	**1.6 J**
Iron, total - 9,100 µg/L Cleanup Goal																					
AAFES-2	**24,000**	**20,000**	**27,000**	**26,000**	**14,000**	**20,000**	**21,900**	**12,000**	**20,000**	**18,000**	**16,000**	**14,000**	**22,000**	**18,000**	**19,000**	**19,400**	**14,400**	**11,000**	**10,000**	**19,000**	**20,000**
AAFES-6/6R	**11,000**	**9,200**	**13,000**	**9,400**	NS	NS	NS	**11,000**	**11,000**	**6,500**	**4,300**	**3,300**	**1,100**	**6,900**	**9,200**	**8,240**	NA	NA	NA	NS	NS
XGM-93-02X	**30,000**	**18,000**	**11,000**	**24,000**	**15,000**	**28,000**	**11,500**	**13,000**	**5,800**	**11,000**	**8,500**	**11,000**	**12,000**	**6,000**	**10,000**	**9,580**	**13,200**	**6,000**	**6,500**	**20,000**	**9,300**
XGM-94-07X	**3,500**	**2,900**	**5,800**	**2,300**	**1,000**	**300**	**1,610**	**1,400**	**4,500**	**9,300**	**8,800**	**12,000**	**13,000**	**23,000**	**10,000**	**6,820**	NS	NS	NS	NS	8,300
XGM-94-08X	**4,800**	**13,000**	**4,500**	**4,600**	**3,200**	**2,500**	**4,520**	**6,100**	**4,600**	**2,200**	**1,300**	**1,000**	**750**	**2,300**	**910**	**147**	NS	NS	NS	NS	1,000
XGM-97-12X	**32,000**	**26,000**	**33,000**	**46,000**	**33,000**	**32,000**	**20,100**	**18,000**	**22,000**	**25,000**	**25,000**	**16,000**	**27,000**	**20,000**	**24,000**	**25,800**	**34,300**	**25,000**	**18,000**	**27,000**	**6,200**
Manganese, total - 375 µg/L Cleanup Goal																					
AAFES-2	**4,600**	**3,900**	**4,800**	**3,700**	**3,100**	**4,000**	**3,590**	**2,700**	**3,790**	**3,600**	**3,320**	**2,490**	**3,700**	**3,100**	**3,270**	**3,460**	**2,740**	**2,800**	**2,800**	**3,100**	**3,500**
AAFES-5	**710**	**180***	**190**	**27**	**21**	**89**	**118**	**50**	**34**	ND	ND	**244**	**36**	**206**	**127**	**32.5**	NS	NS	NS	NS	NS
AAFES-6/6R	**2,900**	**9,200**	**3,400**	**3,000**	NS	NS	NS	**2,900**	**3,090**	**3,630**	**907**	**1,670**	**1,830**	**3,220**	**2,820**	**3,000**	NS	NS	NS	NS	NS
AAFES-7	NS	NS	NS	NS	NS	NS	NS	NS	NS	**106**/ND	**81**	**79**	**5 J**	**706**	**2,390**	**1,640**	**139**	**510**	**330**	NS	**86**
XGM-93-02X	**3,900**	**2,500**	**1,900**	**2,500**	**1,900**	**2,600**	**1,450**	**2,000**	**1,800**	**1,420**	**1,630**	**737**	**3,020**	**612**	**1,180**	**1,570**	**2,020**	**1,400**	**1,400**	**1,900**	**1,300**
XGM-94-04X	**2,900**	**2,200**	**3,400**	**2,000**	**1,400**	**1,400**	**1,580**	**1,100**	**559**	**68**	**2,730**	**6,490**	**2,140**	**2,580**	**2,730**	**1,510**	**1,090**	**1,500**	**1,700 J**	**230**	**5,500**
XGM-94-06X	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**1,400**
XGM-94-07X	**5,700**	**3,700**	**6,100**	**4,500**	**3,600**	**1,000**	**6,120**	**5,100**	**4,120**	**5,100**	**4,990**	**3,870**	**6,060**	**5,560**	**5,380**	**6,940**	NS	NS	NS	NS	**4,200**
XGM-94-08X	**4,500**	**4,600**	**4,900**	**3,600**	**3,600**	**3,800**	**7,260**	**4,200**	**3,380**	**3,100**	**2,150**	**2,070**	**2,780**	**4,620**	**2,300**	**3,210**	NS	NS	NS	NS	**3,500**
XGM-97-12X	**6,300**	**4,100**	**4,200**	**3,900**	**4,100**	**3,000**	**437**	**1,800**	**2,070**	**3,060**	**2,390**	**2,110**	**3,540**	**1,640**	**1,680**	**2,080**	**3,460**	**1,700**	**1,200**	**3,800**	**250**
C_5-C_8 Aliphatics - 300 µg/L VPH Standards																					
AAFES-2	ND	***1,400***	ND	***1,200***	***1,200***	ND	***2,070***	***1,430***	***1,400***	ND	ND	***859***	***1,270***	***1,560 J***	***1,390***	***1,250***	***728***	***850***	***890***	***480 J***	***1,200***
AAFES-6/6R	***370***	***420***	**290**	ND	NA	NA	NA	***305***	ND	ND	ND	**114**	ND	**215**	**287**	**188**	NS	NS	NS	NS	NS
XGM-93-02X	ND	***570***	**270**	***790***	***410***	ND	***788***	***519***	ND	ND	ND	**124**	ND	ND	**65**	**268**	**101**	**94**	**79 J**	**84 J**	**210**
XGM-94-04X	ND	***420***	**140**	ND	ND	ND	ND	ND	ND	ND	ND	***533***	***765***	***497 J***	***1,140***	**186**	**65**	***480***	***360***	***ND***	***590***
XGM-94-07X	ND	ND B	ND	ND	ND	ND	ND	**113**	ND	ND	ND	**159**	ND	**66**	**120**	**58.8**	NS	NS	NS	NS	NA
XGM-94-08X	**120**	**150 B**	**100**	**140**	**120**	ND	ND	**125**	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NA
XGM-97-12X	***970***	***1,300***	***1,100***	***1,100***	***1,100***	ND	***2,370***	***1,740***	***1,230***	ND	***4,050***	***644***	***367***	***507 J***	***494***	**272**	***515***	***420***	***350***	***360***	***350***
C_9-C_{12} Aliphatics - 700 µg/L VPH Standards																					
AAFES-2	ND	**81**	ND	**200**	ND	**57**	***5,220***	***987***	***1,000***	***1,020***	***950***	***768***	***1,080***	**542 J**	***1,650***	**688**	**85.7**	**430**	**530 J**	**330 J**	***790***
XGM-93-02X	ND	**39**	ND	**58**	**33**	**34**	***1,570***	**268**	**94**	**182**	**55.5**	ND	**85.1**	ND	**100**	**76.6**	**ND**	**56**	**78 J**	**ND**	**79 J**
XGM-94-07X	`	ND	ND	ND	ND	ND	ND	ND	ND	ND	**89.1**	**54.5**	**90.5**	ND	**66.8**	ND	NS	NS	NS	NS	NA
XGM-94-08X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**6.19 J**	ND	ND	ND	ND	ND	NS	NS	NS	NS	NA
XGM-97-12X	**96**	ND	ND	**130**	ND	**90**	***7,310***	***1,340***	***1,080***	***2,210***	***1,450***	***922***	**535**	**275 J**	***724***	**162**	***718***	**230**	**170 J**	**420 J**	**150 J**
C_9-C_{10} Aromatics - 200 µg/L VPH Standards																					
AAFES-2	***9,400***	***7,200***	***5,300***	***13,000***	***6,600***	***6,700***	***3,130***	***3,710***	***2,420***	***2,120***	***2,660***	***1,870***	***1,050***	***1,090***	***1,940***	***1,090***	***827***	***730***	***1,100 J***	***990***	***1,400***
XGM-93-02X	***510***	***2,300***	***1,100***	***3,600***	***1,600***	***3,700***	***918***	***766***	***228***	***325***	**110**	**73.4**	ND	ND	ND	**113**	**62.3**	ND	ND	**75 J**	**100**
XGM-94-04X	***200***	***570***	**170**	**28**	ND	ND	ND	ND	ND	ND	ND	***243***	***469***	***300 J***	***769***	**76.8**	ND	***320***	***410 J***	ND	***830***
XGM-94-07X	ND	ND	ND	ND	ND	ND	ND	ND	ND	**45.1 J**	**76.4**	**77.8**	ND	ND	ND	ND	NS	NS	NS	NS	NA
XGM-94-08X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NA
XGM-97-12X	***4,500***	***5,500***	***5,400***	***7,500***	***8,700***	***7,400***	***3,810***	***4,010***	***4,220***	***5,260***	***4,110***	***2,470 J***	***463***	***367 J***	***840***	***253***	***1,560***	***340***	***430 J***	***1,000***	***340***

Notes:

0.333	= Detection	µg/L = microgram per liter	NA = Not analyzed
0.333	= Above background or monitoring criteria	J = Estimated result	ND = Non-detect
0.333	= Above cleanup goal	B = Blank Qualified	NS = not sampled

`

The cleanup goal for iron is the background level. The cleanup goal for manganese is a site-specific goal determined in 2008 (Long-Term Monitoring Plan Former Fort Devens Army Installation, HGL, 2008).
The VPH carbon ranges are not contaminants of concern and are evaluated against MCP GW-1 standards for comparison purposes. Benzene, ethylbenzene, xylenes, and toluene are not contaminants of concern but the cleanup goals are the Maximum Contaminant Levels.

Table 5-1
AOCs 32/43A Groundwater Analytical Results, Spring and Fall 2019
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal [1]	Monitoring Criteria	Spring 2019										Fall 2019			
				32M-01-13XBR		32M-01-14XOB		32M-01-17XBR		32M-01-18XBR		32M-DUP01 32M-01-18XBR		32M-01-15XBR		32M-01-16XBR	
				4/9/2019	Q	4/9/2019	Q	4/9/2019	Q	4/9/2019	Q	4/9/2019	Q	11/20/2019	Q	11/20/2019	Q
Total Metals (SW6020A)																	
Arsenic, Total	µg/L	10	NS	3.0	U	**29**		3.0	U	**3.4**		**3.6**		NA		NA	
Total Metals (SW6010B)																	
Manganese, Total	µg/L	3,500	NS	**50**		**2,200**		**3.0**	J	**2,200**	J	**3,100**	J	NA		NA	
VOCs (SW8260B)																	
1,1,1-Trichloroethane	µg/L	NS	5.0	1.0	UJ	1.0	UJ	1.0	UJ	2.0	UJ	20	UJ	1.0	UJ	1.0	UJ
1,1,2-Trichloroethane	µg/L	NS	5.0	0.50	UJ	0.50	UJ	0.50	UJ	1.0	UJ	10	UJ	0.50	UJ	0.50	UJ
1,2-Dichlorobenzene	µg/L	600	NS	1.0	UJ	1.0	UJ	1.0	UJ	**250**	J	**260**	J	1.0	UJ	1.0	UJ
1,3-Dichlorobenzene	µg/L	100	NS	1.0	UJ	1.0	UJ	**0.45**	J	**41**	J	**42**	J	1.0	UJ	1.0	UJ
1,4-Dichlorobenzene	µg/L	5.0	NS	1.0	UJ	1.0	UJ	1.0	UJ	**29**	J	**31**	J	1.0	UJ	1.0	UJ
cis -1,2-Dichloroethene	µg/L	55	NS	1.0	UJ	1.0	UJ	**0.91**	J	2.0	UJ	**26**	J	1.0	UJ	1.0	UJ
trans -1,2-Dichloroethene	µg/L	100	NS	1.0	UJ	1.0	UJ	1.0	UJ	2.0	UJ	20	UJ	1.0	UJ	1.0	UJ
Benzene	µg/L	NS	5.0	1.0	UJ	1.0	UJ	1.0	UJ	2.0	UJ	20	UJ	1.0	UJ	1.0	UJ
Chlorobenzene	µg/L	NS	100	0.50	UJ	0.50	UJ	0.50	UJ	***180***	J	***170***	J	0.50	UJ	0.50	UJ
Ethylbenzene	µg/L	NS	700	0.50	UJ	0.50	UJ	0.50	UJ	1.0	UJ	10	UJ	0.50	UJ	0.50	UJ
Tetrachloroethene	µg/L	5.0	NS	1.0	UJ	1.0	UJ	1.0	UJ	2.0	UJ	20	UJ	1.0	UJ	1.0	UJ
Toluene	µg/L	1,000	NS	1.0	UJ	1.0	UJ	1.0	UJ	2.0	UJ	20	UJ	1.0	UJ	1.0	UJ
Trichlorethene	µg/L	5.0	NS	1.0	UJ	1.0	UJ	1.0	UJ	2.0	UJ	20	UJ	1.0	UJ	1.0	UJ
Vinyl Chloride	µg/L	NS	2.0	1.0	UJ	1.0	UJ	1.0	UJ	2.0	UJ	20	UJ	1.0	UJ	1.0	UJ
VPH (MADEP)[2]																	
C_5-C_8 Aliphatics	µg/L	NS	300	75	U	75	U	75	UJ	75	UJ	75	U	75	U	75	U
C_9-C_{10} Aromatics	µg/L	NS	200	75	U	75	U	75	UJ	**160**	J	***230***		75	U	75	U
C_9-C_{12} Aliphatics	µg/L	NS	700	75	U	75	U	75	UJ	**110**	J	**190**		75	U	75	U
Benzene	µg/L	NS	5.0	1.0	UJ	1.0	UJ	1.0	UJ	2.0	UJ	20	UJ	1.0	UJ	1.0	UJ
Ethylbenzene	µg/L	NS	700	0.50	UJ	0.50	UJ	0.50	UJ	1.0	UJ	10	UJ	0.50	UJ	0.50	UJ
Toluene	µg/L	NS	1,000	1.0	UJ	1.0	UJ	1.0	UJ	2.0	UJ	20	UJ	1.0	UJ	1.0	UJ
m,p -Xylene[3]	µg/L	NS	NS	7.5	U	7.5	U	7.5	UJ	7.5	UJ	7.5	U	7.5	U	7.5	U
o -Xylene[3]	µg/L	NS	NS	3.8	U	3.8	U	3.8	UJ	3.8	UJ	3.8	U	3.8	U	3.8	U

Table 5-1
AOCs 32/43A Groundwater Analytical Results, Spring and Fall 2019
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal [1]	Monitoring Criteria	Spring 2019										Fall 2019			
				32M-01-13XBR		32M-01-14XOB		32M-01-17XBR		32M-01-18XBR		32M-DUP01 32M-01-18XBR		32M-01-15XBR		32M-01-16XBR	
				4/9/2019	Q	4/9/2019	Q	4/9/2019	Q	4/9/2019	Q	4/9/2019	Q	11/20/2019	Q	11/20/2019	Q
Field Parameters																	
Temperature	°Celsius	NS	NS	**8.0**		**9.8**		**10**		**9.5**		**9.5**		**11.16**		**13.17**	
pH	pH	NS	NS	**6.2**		**6.3**		**7.0**		**6.8**		**6.8**		**6.95**		**7.16**	
Specific Conductance	us/cm	NS	NS	**1,500**		**620**		**1,300**		**1,600**		**1,600**		**6,347**		**1,083**	
ORP	mV	NS	NS	**180**		**-14**		**190**		**170**		**170**		**179**		**160.9**	
Dissolved Oxygen	mg/L	NS	NS	**6.4**		**0.54**		**1.2**		**5.3**		**5.3**		**8.42**		**6.83**	
Turbidity	NTU	NS	NS	**12**		**11**		**3.2**		**3.8**		**3.8**		**3.86**		**1.91**	

Notes:

0.333	= Detection
0.333	= Above monitoring criteria
0.333	= Above cleanup goal

J = Estimated result

NS = No Standard

Q = Qualifier

U = Non-detect

UJ = Estimated non-detect because of QC outliers.

µg/L = microgram per liter

[1] The cleanup goal for arsenic and select VOCs is the MCL; the cleanup goal for manganese is the background level.

[2] VPH carbon range concentrations are evaluated against MassDEP standards for comparison purposes.

[3] The monitoring criteria for total xylenes is 10,000 µg/L.

Table 5-2
Summary of Historical Groundwater Cleanup Goal Exceedances for AOCs 32/43A
Main Post, Former Fort Devens Army Installation, Massachusetts

Sample Location	Spring 2006	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Fall 2008	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Spring 2015*	Spring 2016*	Spring 2017 (T/D)	Spring 2018	Spring 2019
Arsenic (Total) - 10 µg/L Cleanup Goal																						
32M-01-18XBR (Source well)	**30**	**15**	**51**	**3.1 J**	**38**	**34**	**51**	**18**	**18**	**3.5 J**	**3.0 J**	**5.0**	**5.0**	**4.0 J**	**2.0 J**	**6.0**	**3.0 J**	**4.0**	**2.8 J**	**4.7/ 2.4 J**	**6.5**	**3.4**
32M-01-14XBR (Sentry well)	ND	ND	ND	ND	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	NS	NS	NS	NS
32M-01-14XOB (Sentry well)	**59**	**49**	**45**	**69**	**50**	**70**	**66**	NS	**43**	NS	**62**	NS	**80**	NS	**58**	NS	**62 J**	**90**	**13**	**33/30**	**32**	**29**
32M-01-15XBR	ND	ND	ND	ND	ND	ND	**180**	NA	**9.0**	**2.9 J**	ND	**3.0 J**	**2.0 J**	ND	ND	**2.0 J**	ND	NS	NS	NS	NS	NS
32M-01-17XBR	**2.8 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**3.1**	ND	**2.6J/ND**	**ND**	ND
32Z-99-02X (Distant sentry well)	ND	ND	**2.1 J**	**3.2 J**	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	NS	NS	NS	NS
SHL-15	**9.0**	**11**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese (Total) - 3,500 µg/L Cleanup Goal																						
32M-01-18XBR (Source well)	**18,000**	**16,000**	**18,200**	**10,200**	**14,800**	**18,900**	**29,400**	**6,970**	**2,360**	**4,510**	**2,300**	**1,150**	**4,100**	**1,540**	**270**	**137**	**1,990**	**1,720**	**1,100**	**2,300/ 2,700**	**8,400**	**2,200 J**
32M-01-14XOB (Sentry well)	**2,800**	**3,200**	**1,500**	**3,420**	**2,760**	**5,050**	**3,660**	NS	**2,460**	NS	**1,740**	NS	**1,950**	NS	**1,650**	NS	**2,550**	**3,390**	**1,800**	**2,900/ 2,900**	**2,700**	**2,200**
1,4-Dichlorobenzene - 5 µg/L Cleanup Goal																						
32M-01-18XBR (Source well)	**490**	**210 J**	**550**	**67**	**270**	**390**	**180**	**100**	**26**	**62**	**50**	**37**	**69**	**42**	**1.2 J**	**1.1 J**	**71**	**51**	**38**	**46**	**97**	**29 J**
32M-01-15XBR	ND	**5.5**	**0.78 J**	**5.1 J**	**7.9**	**5.7 J**	ND	ND	**0.55 J**	ND	ND	ND	ND	**0.33 J**	ND	ND	ND	NS	NS	NS	NS	NS
32M-01-17XBR	**3.0**	**5.1**	**2.1 J**	**4.2**	**1.0 J**	**1.8 J**	**3.4**	**8.2 J**	**7.1 J**	**0.33 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene - 100 µg/L Cleanup Goal																						
32M-01-18XBR (Source well)	**900**	**480**	**1,200**	**110**	**850**	**1,600**	**540**	**200**	**88**	**210**	**78**	**49**	**280**	**82**	**0.88 J**	**0.97 J**	**131**	**88**	**81**	**170**	**440**	**180 J**
VPH C_9- C_{10} Aromatics - 200 µg/L Monitoring Criteria																						
32M-01-18XBR (Source well)	***5,850***	***4,120***	***6,050***	***952***	***3,230***	***3,660***	***1,890***	***837***	***300***	***541***	***444***	***272***	***728***	***322***	ND	ND	***730***	***360***	***450***	***410***	***760***	**160 J**

Notes:

0.333	= Detection
0.333	= Above monitoring criteria
0.333	= Above cleanup goal

J = Estimated result
NA = Not analyzed
ND = non-detect
NS = not sampled

µg/L = microgram per liter

* = Spring 2015 and 2016 metals results are for dissolved metals.
T/D = Total and dissolved metals results are reported for Spring 2017 results.

Table 5-3
Summary of Historical Groundwater Cleanup Goal Exceedances for Well 32M-01-18XBR in AOCs 32/43A
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal [1]	Monitoring Criteria [2]	April 2002	October 2002	June 2003	December 2003	May 2004	October 2004	June 2005	October 2005	June 2006	October 2006	May 2007	October 2007	June 2008	October 2008	May 2009
Arsenic, Total	µg/L	10	NS	ND	ND	**3.5**	**8.8**	**10**	**6.2**	**24.4**	ND	**30**	**15**	**51**	**3.1**	**38**	**34**	**51**
Arsenic, Dissolved	µg/L	10	NS	ND	ND	**3.0**	NA	**10**	**6.3**	NA	NA	**33**	NA	NA	NA	NA	NA	NA
Manganese, Total	µg/L	3,500	NS	**7,730**	**9,260**	**14,100**	**11,000**	**17,400**	**13,400**	**16,700**	**11,600**	**18,000**	**16,000**	**18,200**	**10,200**	**14,800**	**18,900**	**29,400**
Manganese, Dissolved	µg/L	3,500	NS	**7,500**	**8,960**	**14,200**	**13,900**	**18,100**	**12,500**	NA	NA	**19,000**	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	µg/L	600	NS	**5,900**	**2,500**	**3,800**	**3,900**	**6,200**	**4,200**	**4,500**	**1,450**	**5,900**	**2,800**	**6,100**	**690**	**2,700**	**4,100**	**1,700**
1,3-Dichlorobenzene	µg/L	100	NS	**660**	**300**	**460**	**430**	**730**	**530**	**590**	**209**	**750**	**360**	**850**	**120**	**450**	**580**	**270**
1,4-Dichlorobenzene	µg/L	5.0	NS	**450**	**200**	**310**	**280**	**470**	**320**	**370**	**120**	**490**	**210**	**550**	**67**	**270**	**390**	**180**
Trichloroethene (TCE)	µg/L	5.0	NS	**19**	ND	ND	**3.4**	**5.2**	**3.4**	ND	**0.6**	ND	ND	**4.2**	ND	ND	ND	ND
Bromodichloromethane	µg/L	3.0	NS	NA	NA	NA	ND	ND	ND	ND	ND	**19**	ND	ND	ND	ND	ND	ND
VPH C_9-C_{12} Aliphatics	µg/L	NS	700	***5,000***	ND	**350**	**511**	***5,100***	***4,480***	**470**	**686**	ND	ND	**2.5**	ND	ND	ND	**132 J**
VPH C_9-C_{10} Aromatics	µg/L	NS	200	***9,100***	***2,900***	***1,700***	***2,600***	#####	***4,400***	***260***	***1,150***	***5,850***	***4,120***	***6,050***	***952***	***3,230***	***3,660***	***1,890***
EPH C_9-C_{18} Alphatics	µg/L	NS	700	***920***	**240**	**620**	***940***	***2,300***	***1,100***	***1,400***	**228**	***1,340***	***785***	***854***	**158**	**430**	**455**	**470**
Field Parameters - ORP	mV	NS	NS	**120.4**	**216.3**	**111.9**	**45.1**	NA	**17.6**	**24.7**	**33.8**	**-2.0**	**14.9**	**-30.9**	**1.5**	**-40.1**	**60.9**	**437.7**
Field Parameters -	NTU	NS	NS	NA	NA	NA	**0.91**	NA	**1.63**	**0.51**	**0.50**	**0.10**	**0.65**	**1.9**	**0.40**	**0**	**3**	**17.7**

Notes:

0.333	= Detection
0.333	= Above monitoring criteria
0.333	= Above cleanup goal

J = Estimated result

NA = Not analyzed

ND = Non-detect

NS = No Standard

UJ = Estimated non-detect because of QC outliers.

µg/L = microgram per liter

[1] The cleanup goal for arsenic and the VOC compounds is the MCL.

[2] VPH/EPH concentrations are evaluated against MassDEP standards for comparison purposes.

Table 5-3
Summary of Historical Groundwater Cleanup Goal Exceedances for Well 32M-01-18XBR in AOCs 32/43A
Main Post, Former Fort Devens Army Installation, Massachusetts

	Units	Cleanup Goal [1]	Monitoring Criteria [2]	October 2009	May 2010	October 2010	June 2011	October 2011	May 2012	October 2012	May 2013	October 2013	June 2014	June 2015	June 2016	June 2017	April 2018	April 2019
Arsenic, Total	µg/L	10	NS	**18**	**18**	**3.5 J**	**3 J**	**5**	**5**	**4 J**	**2 J**	**6.0**	**3 J**	**25**	NA	**4.7**	**6.5**	**3.4**
Arsenic, Dissolved	µg/L	10	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**4.0**	**2.8**	**2.4**	NA	NA
Manganese, Total	µg/L	3,500	NS	**6,970**	**2,360**	**4,510**	**2,300**	**1,150**	**4,100**	**1,540**	**27**	**137**	**1,990 J**	**2,140**	NA	**2,300**	**8,400**	**2,200 J**
Manganese, Dissolved	µg/L	3,500	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1,720**	**1,100**	**2,700**	NA	NA
1,2-Dichlorobenzene	µg/L	600	NS	**730**	**300**	**570**	**340**	**260**	**640 J**	**340**	**7.46 J**	**7.30**	**598**	**407**	**340**	**390**	**840**	**250 J**
1,3-Dichlorobenzene	µg/L	100	NS	**150**	**59**	**100**	**86**	**64**	**120 J**	**70**	**7.10 J**	**2.12 J**	**106**	**80**	**58**	**70**	**150**	**41 J**
1,4-Dichlorobenzene	µg/L	5.0	NS	**100**	**26**	**62**	**50**	**37**	**69**	**42**	**1.19 J**	**1.14 J**	**71**	**51**	**38**	**46**	**97**	**29 J**
Trichloroethene (TCE)	µg/L	5.0	NS	ND	ND	ND	ND	ND	**0.60**	ND	ND	ND	ND	ND	ND	ND	0.92 J	**2.0 UJ**
Bromodichloromethane	µg/L	3.0	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
VPH C_9-C_{12} Aliphatics	µg/L	NS	700	**250**	ND	ND	**104**	**108**	**486**	ND	ND	ND	ND	ND	**190**	ND	370	**110 J**
VPH C_9-C_{10} Aromatics	µg/L	NS	200	***837***	***300***	***541***	***444***	***272***	***728***	***322***	ND	ND	***730***	***360***	***450***	***410***	***760***	**160 J**
EPH C_9-C_{18} Alphatics	µg/L	NS	700	NA	ND	ND	ND	ND	**175**	ND	ND	ND	ND	112	NA	NA	NA	NA
Field Parameters - ORP	mV	NS	NS	**120.7**	**-177.8**	**137.2**	**408.1**	**158.8**	**163.4**	**223.8**	**298.8**	**192**	**111.1**	**113.5**	**162.7**	**134.4**	**128.1**	**170**
Field Parameters -	NTU	NS	NS	**2.4**	**244.0**	**3.07**	**2.68**	**3.53**	**2.22**	**1.26**	**1.36**	**3.5**	**1.21**	**2.0**	**12.9**	**11.9**	**4.2**	**3.8**

Notes:

0.333	= Detection
0.333	= Above monitoring criteria
0.333	= Above cleanup goal

J = Estimated result

NA = Not analyzed

ND = Non-detect

NS = No Standard

UJ = Estimated non-detect because of QC outliers.

µg/L = microgram per liter

[1] The cleanup goal for arsenic and the VOC compounds is the MCL.

[2] VPH/EPH concentrations are evaluated against MassDEP standards for comparison purposes.

Table 6-1
Monitoring Well Construction Data Summary - Devens Consolidation Landfill
Main Post, Former Fort Devens Army Installation, Massachusetts

Monitoring Well Identification	Monitoring Well Type	Formation Type at Screen Interval	Surveyed Location[1] and Elevation[2]			Well Construction				
			Northing (ft)	Easting (ft)	TOR Elevation (ft NAVD88)	Screened Interval (ft bgs)[3]		Screen Construction		
						Top	Bottom	Material[4]	Diameter (inches)	Slot Size (inches)
LFM-03-07	groundwater	overburden	3018603.2	625050.7	315.14	10.9	20.9	PVC	2	0.01
LFM-99-01B	groundwater	bedrock	3018613.31	624305.81	350.67	23.3	32.6	PVC	2	0.01
LFM-99-02B	groundwater	bedrock	3018229.31	624305.59	353.83	14.5	23.8	PVC	2	0.01
LFM-99-03B	groundwater	bedrock	3019102.62	624498.69	342.08	38.2	47.5	PVC	2	0.01
LFM-99-05A	groundwater	overburden	3018947.95	624886.54	316.58	19	28.3	PVC	2	0.01
LFM-99-05B	groundwater	bedrock	3018950.88	624874.17	316.58	51.5	56.5	PVC	2	0.01
LFM-99-06ARP	groundwater	overburden	3018434.71	624996.87	337.84	10.09	19.39	PVC	2	0.01
LFM-18-01	landfill gas	overburden	3018370.8	624998.3	333.60	3	12	PVC	2	0.01
LFM-18-02	landfill gas	overburden	3018304.1	625016.9	329.48	3	7	PVC	2	0.01
LFM-18-03	landfill gas	overburden	3018244.0	625033.3	328.62	3	6	PVC	2	0.01

Notes:

[1]Location is presented in Massachusetts State Planar Coordinate System (U.S. Survey Feet) of North American Datum 1983.

[2]Elevations are for observed measurement point (top of riser = TOR) converted from a presumed datum of National Geodetic Vertical Datum (1929) to North American Vertical Datum 1988 (NAVD88) or surveyed on NAVD88.

[3]ft bgs: feet below ground surface

[4]Material: PVC indicates polyvinyl chloride.

Table 6-2
Trigger Groundwater Elevations for Analytical Testing at Devens Consolidation Landfill
Main Post, Former Fort Devens Army Installation, Massachusetts

Well Identification	Top of Casing Elevation (ft NGVD88)	GW Elevation (DTW) for Required Sampling (ft NGVD)	GW Elevation (DTW) Spring 2019 (ft NGVD88)	GW Elevation (DTW) Fall 2019 (ft NGVD88)
LFM-99-01B	350.67	345 or above (6.47 or less)	325.64 (25.03)	323.43 (27.24)
LFM-99-02B[1]	353.83	*any*	336.10 (17.73)	332.59 (21.24)
LFM-99-03B	342.08	335 or above (7.88 or less)	302.27 (39.81)	298.16 (43.92)
LFM-99-05A[1]	316.58	*any*	294.71 (21.87)	290.68 (25.90)
LFM-99-05B	316.58	315 or above (2.38 or less)	300.70 (15.88)	293.03 (23.55)
LFM-99-06ARP[1]	337.84	*any*	322.57 (15.27)	319.53 (18.31)
LFM-03-07[1]	315.14	*any*	296.83 (18.31)	292.00 (23.14)

Notes:

[1] Monitoring well included on LTM sampling list.

NA = not available

NGVD = National Geodetic Vertical Datum

GW = Groundwater

DTW = Depth to water (feet) in feet below top of casing

This table evaluates the DTW at monitoring wells located around the DCL. If the DTW is less than the "trigger" levels for the three wells noted above; it indicates that the water table is shallow and the well(s) should be sampled along with wells on the LTM sampling list.

Table 6-3
Devens Consolidation Landfill Groundwater Analytical Results, Spring 2019
Main Post, Former Devens Army Installation, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B		LFM-99-05A		LFM-DUP01 (LFM-99-05A)		LFM-99-06ARP		LFM-03-07	
			4/10/2019	Q	4/9/2019	Q	4/9/2019	Q	4/10/2019	Q	4/10/2019	Q
MADEP Extractable Petroleum Hydrocarbons (EPH) and Target PAH												
C_9-C_{18} Aliphatic Hydrocarbons	µg/L	700	80	U	80	U	76	U	76	U	82	U
C_{19}-C_{36} Aliphatic Hydrocarbons	µg/L	14,000	80	U	80	U	76	U	76	U	82	U
C_{11}-C_{22} Aromatic Hydrocarbons	µg/L	200	80	U	80	U	76	U	76	U	82	U
PAH All Compounds	µg/L		ND	U	ND	U	ND	U	ND	U	ND	U
MADEP Volatile Petroleum Hydrocarbons (VPH) and BTEX												
C_5-C_8 Aliphatics	µg/L	300	75	U	75	U	75	UJ	75	U	75	UJ
C_9-C_{12} Aliphatics	µg/L	700	75	U	75	U	75	UJ	75	U	75	UJ
C_9-C_{10} Aromatics	µg/L	200	75	U	75	U	75	UJ	75	U	75	UJ
Methyl tert-butyl ether	µg/L	70	3.8	U	3.8	U	3.8	UJ	3.8	U	3.8	UJ
Benzene	µg/L	5.0	2.0	U	2.0	U	2.0	UJ	2.0	U	2.0	UJ
Toluene	µg/L	1,000	3.8	U	3.8	U	3.8	UJ	3.8	U	3.8	UJ
Ethylbenzene	µg/L	700	3.8	U	3.8	U	3.8	UJ	3.8	U	3.8	UJ
m,p -Xylenes	µg/L	10,000	7.5	U	7.5	U	7.5	UJ	7.5	U	7.5	UJ
o -Xylene	µg/L	10,000	3.8	U	3.8	U	3.8	UJ	3.8	U	3.8	UJ
Naphthalene	µg/L	140	3.8	U	3.8	U	3.8	UJ	3.8	U	3.8	UJ
Pesticides (SW846 8081B)												
p,p'-DDT	µg/L	0.30	ND	UJ	ND	UJ	ND	UJ	ND	UJ	**0.010**	J
All other Pesticide compounds	µg/L		ND	UJ	ND	UJ	ND	UJ	ND	UJ	ND	UJ
Total Metals (Select List)												
Arsenic, Total	µg/L	10	3.0	U	3.0	U	**1.8**	J	3.0	U	3.0	U
Barium, Total	µg/L	2,000	**5.8**	J	**6.7**	J	**8.0**	J	**3.4**	J	**21**	
Cadmium, Total	µg/L	5.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Chromium, Total	µg/L	100	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U
Copper, Total	µg/L	1,300	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Iron, Total	µg/L	NS	50	U	**130**	J	**490**	J	50	U	50	U
Lead, Total	µg/L	15	10	U	10	U	10	U	10	U	10	U
Manganese, Total	µg/L	NS	3.0	U	**4.9**	J	**14**		3.0	U	**1.8**	J
Selenium, Total	µg/L	50	20	U	20	U	20	U	20	U	**14**	J
Silver, Total	µg/L	100	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
Mercury	µg/L	2.0	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U

Table 6-3
Devens Consolidation Landfill Groundwater Analytical Results, Spring 2019
Main Post, Former Devens Army Installation, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B		LFM-99-05A		LFM-DUP01 (LFM-99-05A)		LFM-99-06ARP		LFM-03-07	
			4/10/2019	Q	4/9/2019	Q	4/9/2019	Q	4/10/2019	Q	4/10/2019	Q
General Chemistry												
Cyanide, Total	mg/L	0.20	0.0050	U	0.0050	U	0.0050	U	**0.0050**	J	0.0050	U
Nitrate/Nitrite (as N)	mg/L	NS	**0.28**		**0.47**		**0.49**		**0.81**		**1.2**	
Chemical Oxygen Demand	mg/L	NS	20	U	20	U	20	U	20	U	20	U
Chloride	mg/L	NS	**180**	J	**98**		**97**		**250**		**250**	
Sulfate	mg/L	NS	**20**		**20**		**20**		**27**		**28**	
Alkalinity as CaCO3	mg/L	NS	**65**		**90**		**89**		**100**		**95**	
TDS	mg/L	NS	**390**		**290**		**290**		**550**		**580**	
Water Quality Parameters												
Temperature	°Celsius	NS	**8.3**		**9.6**		**9.6**		**9.8**		**6.8**	
ORP	mV	NS	**210**		**89**		**89**		**140**		**200**	
pH	Std units	NS	**6.4**		**6.5**		**6.5**		**6.4**		**6.3**	
Specific Conductance	µS/cm	NS	**820**		**540**		**540**		**1,100**		**1,200**	
Dissolved Oxygen	mg/L	NS	**6.7**		**7.1**		**7.1**		**5.2**		**9.4**	
Turbidity	NTU	NS	**0.75**		**12**		**12**		**3.1**		**11**	

Notes:

0.333	= Detection
0.333	= Above monitoring criteria

J = Estimated Result
NS = No Standard
Q = Qualifier
U = The target analyte was not detected at or above the laboratory reporting limit.
UJ = Estimated non-detect because of QC outliers.
ND = non-detect
µg/L = microgram per liter
mg/L = milligram per lter
mV = millivolts
µS/cm = microsiemens per centimeter
NTU - nephelometric turbidity units

Table 6-4
Devens Consolidation Landfill Groundwater Analytical Results, Fall 2019
Main Post, Former Devens Army Installation, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B		LFM-99-05A		LFM-DUP01 LFM-99-05A		LFM-99-06ARP		LFM-03-07	
			10/4/2019	Q	10/8/2019	Q	10/8/2019	Q	10/8/2019	Q	10/8/2019	Q
MADEP Extractable Petroleum Hydrocarbons (EPH) and Target PAHs												
C_9-C_{18} Aliphatic Hydrocarbons	µg/L	700	74	U	78	U	74	U	71	U	NS / Dry	
C_{19}-C_{36} Aliphatic Hydrocarbons	µg/L	14,000	74	U	78	U	74	U	71	U	NS / Dry	
C_{11}-C_{22} Aromatic Hydrocarbons	µg/L	200	74	U	78	U	74	U	71	U	NS / Dry	
PAH - All Compounds	µg/L		ND	U	ND	U	ND	U	ND	U	NS / Dry	
MADEP Volatile Petroleum Hydrocarbons (VPH) and BTEX												
C_5-C_8 Aliphatics	µg/L	300	75	U	75	U	75	U	75	U	NS / Dry	
C_9-C_{12} Aliphatics	µg/L	700	75	U	75	U	75	U	75	U	NS / Dry	
C_9-C_{10} Aromatics	µg/L	200	75	U	75	U	75	U	75	U	NS / Dry	
Methyl tert-butyl ether	µg/L	70	3.8	U	3.8	U	3.8	U	3.8	U	NS / Dry	
Benzene	µg/L	5.0	2.0	U	2.0	U	2.0	U	2.0	U	NS / Dry	
Toluene	µg/L	1,000	3.8	U	3.8	U	3.8	U	3.8	U	NS / Dry	
Ethylbenzene	µg/L	700	3.8	U	3.8	U	3.8	U	3.8	U	NS / Dry	
m,p -Xylenes	µg/L	10,000	7.5	U	7.5	U	7.5	U	7.5	U	NS / Dry	
o -Xylene	µg/L	10,000	3.8	U	3.8	U	3.8	U	3.8	U	NS / Dry	
Naphthalene	µg/L	140	3.8	U	3.8	U	3.8	U	3.8	U	NS / Dry	
Pesticides (SW846 8081B)												
Pesticides - All Compounds	µg/L		ND	U	ND	U	ND	U	ND	U	NS / Dry	
Metals (Select List)												
Arsenic, Dissolved	µg/L	10	3.0	U	3.0	U	3.0	U	3.0	U	NS / Dry	
Barium, Dissolved	µg/L	2,000	**24**		**22**		**24**		**9.5**	J	NS / Dry	
Cadmium, Dissolved	µg/L	5.0	3.0	U	3.0	U	3.0	U	3.0	U	NS / Dry	
Chromium, Dissolved	µg/L	100	4.0	U	4.0	U	4.0	U	4.0	U	NS / Dry	
Copper, Dissolved	µg/L	NS	5.0	U	5.0	U	5.0	U	5.0	U	NS / Dry	
Iron, Dissolved	µg/L	NS	50	U	**34**	J	50	U	50	U	NS / Dry	
Lead, Dissolved	µg/L	15	10	U	10	U	10	U	10	U	NS / Dry	
Manganese, Dissolved	µg/L	NS	3.0	U	3.0	U	3.0	U	3.0	U	NS / Dry	
Selenium, Dissolved	µg/L	50	20	U	20	U	20	U	**12**	J	NS / Dry	
Silver, Dissolved	µg/L	100	1.5	U	1.5	U	1.5	U	1.5	U	NS / Dry	
Mercury	µg/L	2.0	0.20	U	0.20	U	0.20	U	0.20	U	NS / Dry	

Table 6-4
Devens Consolidation Landfill Groundwater Analytical Results, Fall 2019
Main Post, Former Devens Army Installation, Massachusetts

	Units	Monitoring Criteria	LFM-99-02B		LFM-99-05A		LFM-DUP01 LFM-99-05A		LFM-99-06ARP		LFM-03-07	
			10/4/2019	Q	10/8/2019	Q	10/8/2019	Q	10/8/2019	Q	10/8/2019	Q
General Chemistry												
Cyanide, Total	mg/L	0.20	**0.0026**	J	0.0050	U	0.0050	U	0.0050	U	NS / Dry	
Nitrate/Nitrite (as N)	mg/L	NS	**0.55**	J	**0.82**		**0.92**		**1.3**		NS / Dry	
Chemical Oxygen Demand	mg/L	NS	40	UJ	20	U	20	U	**9.8**	J	NS / Dry	
Chloride	mg/L	NS	**420**		**220**		**220**		**340**		NS / Dry	
Sulfate	mg/L	NS	**19**		**21**		**21**		**26**		NS / Dry	
Alkalinity as CaCO3	mg/L	NS	**89**		**88**		**89**		**130**		NS / Dry	
TDS	mg/L	NS	**850**		**540**		**530**		**850**		NS / Dry	
Polychlorinated Biphenyls (µg/L)												
PCB-1016 (Aroclor 1016)	µg/L	0.5	0.180	U	0.180	U	0.190	U	0.180	U	NS / Dry	
PCB-1221 (Aroclor 1221)	µg/L	0.5	0.160	U	0.170	U	0.170	U	0.170	U	NS / Dry	
PCB-1232 (Aroclor 1232)	µg/L	0.5	0.220	U	0.230	U	0.230	U	0.230	U	NS / Dry	
PCB-1248 (Aroclor 1248)	µg/L	0.5	0.220	U	0.230	U	0.230	U	0.230	U	NS / Dry	
PCB-1254 (Aroclor 1254)	µg/L	0.5	0.160	U	0.170	U	0.170	U	0.170	U	NS / Dry	
PCB-1260 (Aroclor 1260)	µg/L	0.5	0.180	U	0.180	U	0.190	U	0.180	U	NS / Dry	
Field Parameters												
Temperature	°Celcius	NS	**11**		**11**		**11**		**13**		NS / Dry	
ORP	mV	NS	**190**		**190**		**190**		**160**		NS / Dry	
pH	Std units	NS	**6.4**		**6.3**		**6.3**		**6.5**		NS / Dry	
Specific Conductance	µS/cm	NS	**1,600**		**920**		**920**		**1,400**		NS / Dry	
Dissolved Oxygen	mg/L	NS	**8.7**		**5.6**		**5.6**		**5.2**		NS / Dry	
Turbidity	NTU	NS	**0.52**		**7.6**		**7.6**		**2.0**		NS / Dry	

Notes:

0.333	= Detection
0.333	= Above monitoring criteria

J = Estimated Result
NS = No Standard
Q = Qualifier
U = The target analyte was not detected at or above the laboratory reporting limit.
UJ = Estimated non-detect because of QC outliers.

ND = non-detect
µg/L = microgram per liter
mg/L = milligram per lter
mV = millivolts
µS/cm = microsiemens per centimeter
NTU - nephelometric turbidity units

Table 6-5
Devens Consolidation Landfill Gas Probe Monitoring Results
Devens Consolidation Landfill
Devens, Massachusetts

Sampler(s): Melissa Miller - KGS **Date:** 11/11/2019
Weather: Cool/Overcast, Humidity 69% **Temperature (F)** 43°F
Barometer (in-Hg): 30.0 in-Hg **Time:** 0900
Nearest Monitoring Well (LFM-99-06A-RP) Depth to Water (ft btoc): 16.45

Gas Monitoring Well ID	Time	VOC	H_2S	CO	LEL	O_2	O_2	CO_2	CH_4	LEL	Remarks
		ppm Multi RAE+	**ppm** Multi RAE+	**ppm** Multi RAE+	**%** Multi RAE+	**%** Multi RAE+	**%** GEM 5000+	% GEM 5000+	% GEM 5000+	% GEM 5000+	
LFGM-18-01	0940	0.3	0.0	0.0	0.0	21.0	21.5	1.2	0.0	0.0	Standing water in roadbox
LFGM-18-02	0925	0.7	0.0	0.0	0.0	20.9	21.4	0.8	0.0	0.0	Standing water in roadbox
LFGM-18-03	0910	0.4	0.0	0.0	0.0	20.1	18.8	2.6	0.0	0.0	Standing water in roadbox

Notes:
Ran each individual gas meter for a minimun of 5 minutes before collecting a gas reading from each well port.

CALIBRATION INFORMATION:

1. Instrument: MultiRAE+ Calibrated by: Pine Environmental (11/5/19), All gas Ok
Calibrated With: 50 ppm CO, 10 ppm H2S, 50% LEL (CH4), 20.9% O2, VOC 100 ppm isobutylene (R.F. = 1.0)
Calibration Check Performed by: Melissa Miller (11/11/19), All gas Ok
2. Instrument: Landtec GEM 5000+ Calibrated by Pine Environmental (11/5/19), All gas Ok
Calibrated With: 15% CH4, 15% CO2, 20.9% O2
Calibration Check Performed by: Melissa Miller (11/11/19), All gas Ok

VOC - Volatile Organic Compounds
H_2S - Hydrogen Sulfide
CO - Carbon Monoxide
LEL - Lower Explosive Limit
O_2 - Oxygen
CO_2 - Carbon Dioxide
CH_4 - Methane

Table 6-6
Devens Consolidation Landfill Leachate Analytical Results, Fall 2019
Main Post, Former Fort Devens Army Installation, Massachusetts

MassDevelopment Industrial Wastewater Discharge Permit No. 017 (Summary)

Analytical Fraction	Parameter	Limitations (mg/L)	Fall 2019 - Annual Sampling Event Date Sampled: 10/23/2019 *Concentrations (mg/L)*
Metals composite	Arsenic	0.20	**0.0015** J
	Cadmium	0.045	0.003 U
	Chromium	0.40	0.004 U
	Copper	0.75	0.005 U
	Lead	0.20	0.01 U
	Nickel	0.60	**0.0031** J
	Silver	0.30	0.0015 U
	Zinc	0.70	0.02 U
	Mercury	0.001	0.0002 U
TTO	Total Toxic Organics	5.00	**0.016** J
TSS	Total Suspended Solids	400	**12**
Cyanide	Cyanide (total)	NL	0.0050 U
TPH	TPH (DRO)	NL	**2.6**
Phenols	Phenols (total)	NL	0.050 U
pH *grab sample*	pH (units)	5.5 – 9.5	**7.7**

Notes:
Detections are bolded.
mg/L = milligram per liter
ND = non-detect
NL = No limit
U = The target analyte was not detected at or above the laboratory reporting limit.
J = Estimated result
TTO = Total Toxic Organics (sum of VOCs, SVOCs, Pesticides and PCBs)
VOCs = Volatile Organic Compounds
SVOCs = SemiVolatile Organic Compounds
PCBs = Polychlorinated Biphenyls
TSS = Total Suspended Solids
TPH = Total Petroleum Hydrocarbons

Table 6-7
Devens Consolidation Landfill Leachate Annual Discharge Quantities
Main Post, Former Fort Devens Army Installation, Massachusetts

Period	Discharge Quantities (Gallons)																	
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Annual Total	1,259,866	960,394	473,802	414,858	390,085	277,626	304,547	237,983	217,155	353,618	204,483	225,768	237,752	190,403	209,849	261,989	320,357	193,649
Total Leachate Discharge Quantity (2002-2019) =																		**6,734,184**

Notes:
In 2002, startup was during the April to June period.
During 2003, the April to June period is estimated due to a broken flow meter.

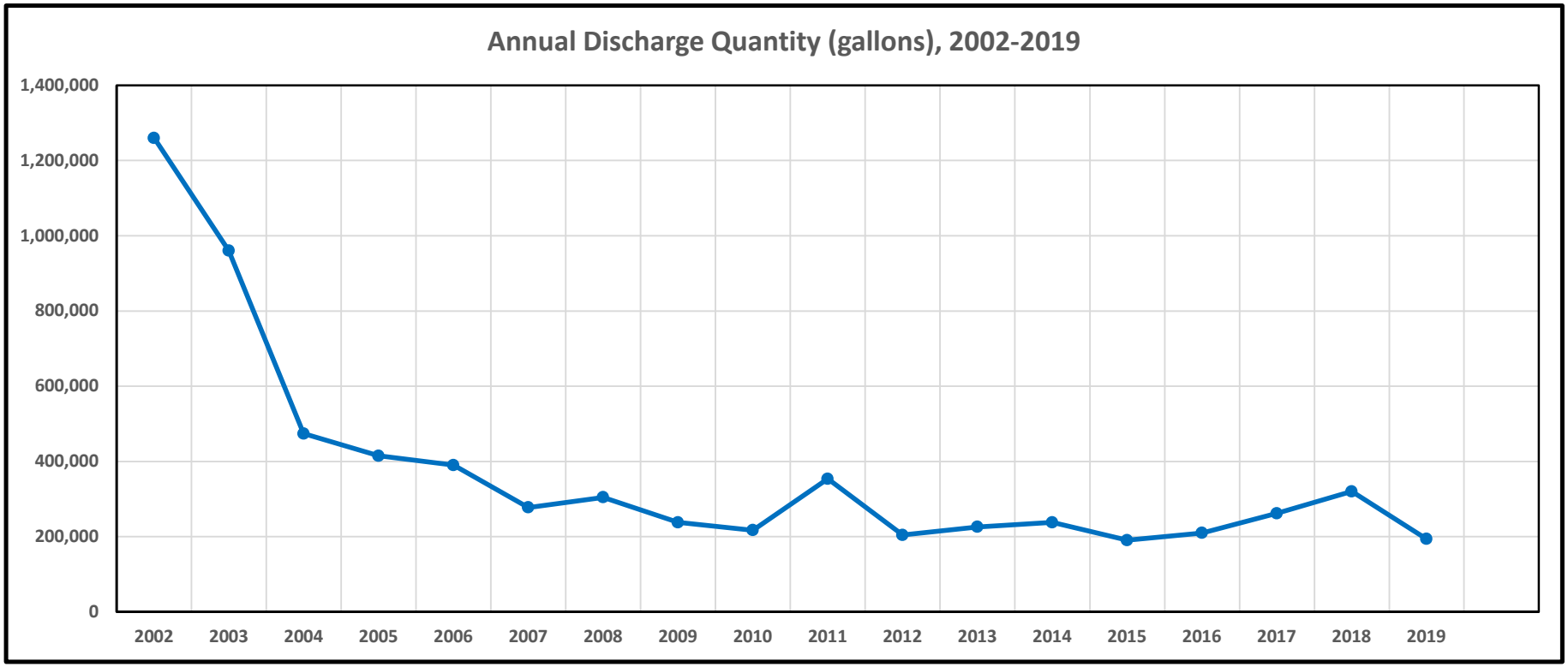

Table 6-8
Devens Consolidation Landfill Historical Groundwater Data, LFM-99-02B
Main Post, Former Devens Army Installation, Massachusetts

LFM-99-02B	Units	Monitoring Criteria	Spring 2003	Q	Fall 2003	Q	Spring 2004	Q	Fall 2004	Q	Spring 2005	Q	Fall 2005	Q	Spring 2006	Q	Spring 2007	Q	Spring 2008	Q	Fall 2008	Q	Spring 2009	Q	Fall 2009	Q	Spring 2010	Q	Fall 2010	Q	Spring 2011	Q	Fall 2011	Q
Extractable Petroleum Hydrocarbons (EPH)																																		
Naphthalene	µg/L	140	1.0	U	5.1	U	2.4	U	2.1	U	10.0	U	0.400	U	0.2	U	0.46	U	0.412	U	0.430	U	10	U	NA		0.419	U	0.400	U	0.400	U	0.400	U
Pesticides																																		
Aldrin	µg/L	0.50	0.0064	U	0.0067	U	0.0076	U	0.0076	U	0.05	UJ	0.200	UJ	0.05	U	0.0217	U	0.021	UJ	0.021	UJ	0.200	UJ	NA		0.020	U	0.020	U	0.020	U	0.020	U
Dieldrin	µg/L	0.10	0.013	U	0.0013	U	0.015	U	0.014	U	0.1	U	0.040	UJ	0.05	U	0.0435	U	0.043	UJ	0.042	UJ	0.040	UJ	NA		0.040	U	0.040	U	0.040	U	0.040	U
alpha-Chlordane	µg/L	2.0	0.0064	U	0.0067	U	0.0076	U	0.071	U	0.05	U	0.020	UJ	0.05	U	0.0217	U	0.021	UJ	0.021	UJ	0.020	UJ	NA		0.020	U	0.020	U	0.020	U	0.020	U
gamma-Chlordane	µg/L	2.0	0.0064	U	**0.0053**	**J**	0.0076	U	0.071	U	0.05	U	0.020	UJ	0.05	U	0.0217	U	0.021	UJ	0.021	UJ	0.020	UJ	NA		0.020	U	0.020	U	0.020	U	0.020	U
Chlordane	µg/L	2.0	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
gamma-BHC (Lindane)	µg/L	0.20	0.0064	U	0.0067	U	0.0076	U	0.0076	U	0.05	U	0.020	UJ	0.05	U	0.0217	U	0.021	UJ	0.021	UJ	0.020	UJ	NA		0.020	U	0.020	U	0.020	U	0.020	U
Dissolved Metals																																		
Arsenic	µg/L	10	5.0	U	50.0	U	5.0	U	5.0	U	4.2	U	**5.0**	**J**	2.5	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U	**2**	J
Chromium	µg/L	100	**28**		**1.7**	**J**	**0.96**	**J**	**1.07**	**J**	12.0	U	NA		10.0	U	10.0	U	10	U	10	U	5	U	**40**		10	U	10	U	10	U	10	U
Iron	µg/L	NS	NA		100	U	**17**	**J**	100	U	38.0	U	**32**	**J**	50.0	U	50.0	U	50	U	**28**	**J**	50	U	**380**		50	U	50	U	50	U	50	U
Lead	µg/L	15	5.0	U	**8.5**	**J**	5.0	U	5.0	U	**3.1**		10	U	2.5	U	10.0	U	10	U	10	U	**10**	**J**	10	U	10	U	10	U	10	U	**3**	J
Manganese	µg/L	NS	NA		**2.4**	**J**	**1.5**	**J**	**12.7**	**J**	**5.2**	**J**	10	U	10.0	U	**1.1**	**J**	10	U	10	U	10	U	**9.1**	**J**	10	U	10	U	10	U	10	U
General Chemistry																																		
Total Cyanide	mg/L	0.20	0.01	U	**0.004**	**J**	0.01	U	**0.005**	**J**	0.01	U	0.005	U	0.05	U	0.01	UJ	0.005	U	0.005	U	0.005	U	NA		**0.0011**	**J**	0.005	U	0.005	U	0.005	U
Nitrate/Nitrite (as N)	mg/L	NS	**0.21**		**1.4**		**0.66**		**0.796**		**0.36**	**J**	0.64	U	**0.45**		**0.5**		**0.43**	**J**	**1.9**		**0.92**		NA		**0.41**		**0.54**		**0.43**		**0.76**	
Chemical Oxygen Demand	mg/L	NS	**170**		50.0	U	**15**	**J**	50.0	U	20.0	U	20	U	10.0	U	20.0	U	20	U	**12**	**J**	20	U	NA		**20**		20	U	**8**	**J**	20	**U**
Water Quality Parameters																																		
pH	std	NS	**6.20**		**6.38**		**6.09**		**6.38**		**5.97**		**6.17**		**6.32**		**6.15**		**6.32**		**7.00**		**5.57**		**6.22**		**6.71**		**6.35**		**6.10**		**6.03**	
Oxidation-Reduction Potential	mV	NS	NA		**204.7**		**243.3**		**308.4**		**266.3**		**311.3**		**223.6**		**200.8**		**160.7**		**55.2**		**215.4**		**113**		**-232.2**		**163.6**		**150.1**		**142.2**	
Turbidity	NTU	NS	NA		**0.40**		**0.80**		**0.55**		**0.37**		**3.8**		**0.18**		**0.00**		**2.80**		**2.0**		**0.0**		**0.0**		**2.2**		**0.39**		**0.00**		**2.57**	

Notes:

0.333 = Detection

0.333 = Above monitoring criteria

J = Estimated result
NA = Not analyzed
NS = No Standard
Q = Qualifier
U = The target analyte was not detected at or above the laboratory reporting limit.
UJ = Estimated non-detect
ND = non-detect
µg/L = microgram per liter
mg/L = milligram per liter
mV = millivolts
µS/cm = microsiemens per centimeter
NTU - nephelometric turbidity units

Table 6-8
Devens Consolidation Landfill Historical Groundwater Data, LFM-99-02B
Main Post, Former Devens Army Installation, Massachusetts

LFM-99-02B	Units	Monitoring Criteria	Spring 2012	Q	Fall 2012	Q	Spring 2013	Q	Fall 2013	Q	Spring 2014	Q	Fall 2014	Q	Spring 2015	Q	Fall 2015	Q	Spring 2016	Q	Fall 2016	Q	Spring 2017	Q	Fall 2017	Q	Spring 2018	Q	Fall 2018	Q	Spring 2019	Q	Fall 2019	Q
Extractable Petroleum Hydrocarbons (EPH)																																		
Naphthalene	µg/L	140	0.400	U	**0.148**	**J**	0.400	U	0.400	U	0.400	U	1.0	U	5.100	U	4.300	U	2.0	U	2.3	U	1.9	U	1.9	U	1.9	U	1.4	U	1.6	U	1.5	U
Pesticides																																		
Aldrin	µg/L	0.50	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.010	U	0.026	U	0.051	U	0.013	U	0.019	U	0.017	U	0.017	U	0.019	UJ	0.017	UJ	0.0086	UJ	0.0089	U
Dieldrin	µg/L	0.10	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.010	U	0.026	U	0.051	U	0.007	U	0.010	U	0.0096	U	0.0096	U	0.0110	UJ	0.0096	UJ	0.0048	U	0.0049	U
alpha-Chlordane	µg/L	2.0	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.054	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
gamma-Chlordane	µg/L	2.0	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.054	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chlordane	µg/L	2.0	NA		NA		NA		NA		NA		NA		0.130	U	0.530	U	0.16	U	0.31	U	0.29	U	0.29	U	0.32	UJ	0.29	UJ	0.14	U	0.15	U
gamma-BHC (Lindane)	µg/L	0.20	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.011	U	0.026	U	0.051	U	0.007	U	0.010	U	0.0096	U	0.0096	U	0.0110	UJ	0.0096	UJ	0.0048	U	0.0049	U
Dissolved Metals																																		
Arsenic	µg/L	10	5	U	5	U	5	U	5	U	3	U	3	U	2.0	U	4.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Chromium	µg/L	100	10	U	10	U	10	U	10	U	10	U	10	U	5.0	U	10	U	4.0	U	**6.0**	**J**	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U
Iron	µg/L	NS	50	U	50	U	50	U	50	U	50	U	50	U	50	U	100	U	50	U	**28**		50	U	75	U	50	U	50	U	50	U	50	U
Lead	µg/L	15	10	U	10	U	10	U	10	U	10	U	10	U	2.5	U	5.0	U	10	U	10	U	10	U	2.5	U	10	U	15	U	10	U	10	U
Manganese	µg/L	NS	10	U	10	U	10	U	10	U	10	U	10	U	7.5	U	15	U	3.0	U	**2.0**	**J**	3.0	U	5.0	U	3.0	U	3.0	U	3.0	U	3.0	U
General Chemistry																																		
Total Cyanide	mg/L	0.20	**0.002**	**J**	**0.0020**	**J**	0.005	U	0.005	U	**0.0001**	**J**	0.004	U	0.0011	U	**0.0082**	**J**	0.005	U	**0.0082**	**J**	0.005	U	0.005	U	**0.0048**	**J**	**0.0044**	**J**	0.0050	U	**0.0026**	**J**
Nitrate/Nitrite (as N)	mg/L	NS	0.22	U	**0.49**		**0.069**	**J**	**0.51**		**0.52**		**0.36**		**0.390**		**0.630**		**0.60**		**0.630**		**0.47**		**0.78**		**0.60**		**0.69**		**0.28**		**0.55**	**J**
Chemical Oxygen Demand	mg/L	NS	20	U	20	U	**15**	**J**	20	U	**4.1**	**J**	10	U	15	U	20	U	10	U	20	U	**5.4**	**J**	10	U	**10**	**J**	10	U	20	U	40	UJ
Water Quality Parameters																																		
pH	std	NS	**6.25**		**6.29**		**5.87**		**6.45**		**6.00**		**6.51**		**6.07**		**---**		**6.16**		**6.44**		**6.55**		**6.72**		**6.27**		**5.95**		**6.4**		**6.4**	
Oxidation-Reduction Potential	mV	NS	**135.5**		**196.3**		**303.3**		**101.8**		**200.3**		**113.3**		**248.5**		**---**		**197.0**		**77.8**		**172.6**		**111.1**		**80.9**		**226**		**210**		**190**	
Turbidity	NTU	NS	**0.33**		**0.00**		**0.00**		**0.79**		**0.69**		**0.88**		**1.65**		**---**		**0.36**		**1.73**		**7.57**		**2.59**		**2.91**		**2.47**		**0.75**		**0.52**	

Notes:

0.333 = Detection

0.333 = Above monitoring

J = Estimated result
NA = Not analyzed
NS = No Standard
Q = Qualifier
U = The target analyte was not detected at or above the
UJ = Estimated non-detect
ND = non-detect
µg/L = microgram per liter
mg/L = milligram per liter
mV = millivolts
µS/cm = microsiemens per centimeter
NTU - nephelometric turbidity units

Table 6-9
Devens Consolidation Landfill Historical Groundwater Data, LFM-99-05A
Main Post, Former Fort Devens Army Installation, Massachusetts

LFM-99-05A	Units	Monitoring Criteria	Spring 2003	Q	Fall 2003	Q	Spring 2004	Q	Fall 2004	Q	Spring 2005	Q	Spring 2006	Q	Spring 2007	Q	Spring 2008	Q	Fall 2008	Q	Spring 2009	Q	Fall 2009	Q	Winter 2010	Q	Spring 2010	Q	Fall 2010	Q	Spring 2011	Q	Fall 2011	Q
Extractable Petroleum Hydrocarbons (EPH)																																		
Naphthalene	µg/L	140	1.0	U	5.1	U	2.4	U	2.1	U	10.0	U	0.2	BJ	0.421	U	0.408	U	0.430	U	0.4	U	0.421	U	NA		0.426	U	0.400	U	0.400	U	0.400	U
Pesticides																																		
Aldrin	µg/L	0.50	0.0064	U	0.0067	U	0.0072	U	0.0072	U	0.05	U	0.05	U	0.0215	U	0.020	UJ	0.021	U	0.022	U	0.022	U	NA		0.021	U	0.021	U	0.020	U	0.020	U
Dieldrin	µg/L	0.10	0.013	U	0.013	U	0.014	U	0.014	U	0.1	U	0.05	U	0.043	U	0.040	UJ	0.042	U	0.044	U	0.044	U	NA		0.043	U	0.041	U	0.040	U	0.040	U
alpha-Chlordane	µg/L	2.0	0.0064	U	0.0067	U	0.0072	U	0.0072	U	0.05	U	0.05	U	0.0215	U	0.020	UJ	0.021	U	0.022	UJ	0.022	UJ	NA		0.021	U	0.021	U	0.020	U	0.020	U
gamma-Chlordane	µg/L	2.0	0.0064	U	0.0067	U	0.0072	U	0.0072	U	0.05	U	0.05	U	0.0215	U	0.020	UJ	0.021	U	0.022	U	0.022	U	NA		0.021	U	0.021	U	0.020	U	0.020	U
Chlordane	µg/L	2.0	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
gamma BHC (Lindane)	µg/L	0.20	0.0064	U	0.0067	U	0.0072	U	0.0072	U	0.05	U	0.05	U	0.0215	U	0.020	UJ	0.021	U	0.022	U	0.022	U	NA		0.021	U	0.021	U	0.020	U	0.020	U
Metals (Total)																																		
Arsenic	µg/L	10	**7.5**		**6.9**	**J**	5.0	U	5.0	U	**4.2**	**J**	2.5	U	**2.4**	**J**	5.0	U	5.0	U	**2**	**J**	5.0	U	5	U	5	U	**4.6**	**J**	5	U	**3**	**J**
Chromium	µg/L	100	10.0	U	**1.6**	**J**	**7.7**	**J**	**1.37**	**J**	**6**	**J**	10.0	U	10.0	U	10	U	10	U	**20**		NA		**40**		10	U	10	U	10	U	10	U
Iron	µg/L	NS	NA		**96**	**J**	**130**		**33.3**	**J**	**666**		**93.2**		**70**		50	U	**70**		**510**		**20**	**J**	**380**		**70**		**480**		**50**	**J**	**20**	**J**
Lead	µg/L	15	**9.3**		**9.5**	**J**	5.0	U	5.0	U	2.9	U	2.5	U	10.0	U	10	U	10	U	**2**	**J**	10	U	10	U	10	U	10	U	10	U	**2**	**J**
Manganese	µg/L	NS	NA		**3.6**	**J**	**8.5**	**J**	**2.1**	**J**	**33.9**		10.0	U	**3.9**	**J**	10	U	**2.4**	**J**	**21**		10	U	**9.1**	**J**	10	U	**12.0**		10	U	10	U
General Chemistry																																		
Total Cyanide	mg/L	0.20	0.01	U	**0.004**	**J**	0.01	U	**0.009**	**J**	0.01	U	0.05	U	0.01	UJ	0.005	U	0.005	UJ	**0.002**	**J**	0.005	U	NA		0.005	U	0.005	U	0.005	U	0.005	U
Nitrate/Nitrite (as N)	mg/L	NS	**1.6**		**1.4**		**1.4**		**1.34**		**1**		**0.4**		**0.46**		**0.60**	**J**	**0.57**		**0.55**		**0.46**	**J**	NA		**0.64**		**0.49**	**J**	**0.51**		**0.42**	
Chemical Oxygen Demand	mg/L	NS	**100**		50.0	U	**13**	**J**	**12**	**J**	20.0	U	10.0	U	11.0	U	20	U	20	U	**8.1**	**J**	20	U	NA		20	U	24	U	**34**		20	U
Water Quality Parameters																																		
pH	std units	NS	**6.10**		**6.11**		**5.97**		**5.84**		**6.17**		**6.24**		**5.81**		**6.09**		**6.93**		**6.08**		**5.89**		**6.37**		**6.23**		**6.05**		**5.56**		**6.16**	
Oxidation-Reduction Potential	mV	NS	NA		**231.2**		**199.2**		**154.7**		**141.3**		**205.9**		**220.0**		**116.1**		**61.8**		**122**		**173.7**		**68.7**		**-223**		**180.6**		**238**		**-255.1**	
Turbidity	NTU	NS	NA		**4.43**		**2.59**		**2.50**		**26.2**		**2.51**		**3.60**		**0.58**		**2.33**		**4.1**		**4.67**		**6.2**		**1.7**		**2.8**		**3.1**		**2.40**	

Notes:

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0.333	= Above monitoring criteria

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UJ = Estimated non-detect
ND = non-detect
µg/L = microgram per liter
mg/L = milligram per liter
mV = millivolts
µS/cm = microsiemens per centimeter
NTU - nephelometric turbidity units

Table 6-9
Devens Consolidation Landfill Historical Groundwater Data, LFM-99-05A
Main Post, Former Fort Devens Army Installation, Massachusetts

LFM-99-05A	Units	Monitoring Criteria	Spring 2012	Q	Fall 2012	Q	Spring 2013	Q	Fall 2013	Q	Spring 2014	Q	Fall 2014	Q	Spring 2015	Q	Fall 2015	Q	Spring 2016	Q	Fall 2016	Q	Spring 2017	Q	Fall 2017	Q	Spring 2018	Q	Fall 2018	Q	Spring 2019	Q	Fall 2019	Q
Extractable Petroleum Hydrocarbons (EPH)																																		
Naphthalene	µg/L	140	0.400	U	0.400	U	0.400	U	0.400	U	4.000	U	1.000	U	3.300	U	4.00	U	1.9	U	**3.20**		1.9	U	2.1	U	2.1	U	5.0	U	1.6	U	1.6	U
Pesticides																																		
Aldrin	µg/L	0.50	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.010	U	0.026	U	0.050	U	0.012	U	0.019	U	0.017	U	0.018	U	0.017	U	0.017	U	0.0093	UJ	0.0091	U
Dieldrin	µg/L	0.10	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.010	U	0.026	U	0.050	U	0.007	U	0.011	U	0.0096	U	0.010	U	0.0095	U	0.0096	U	0.0051	U	0.0051	U
alpha-Chlordane	µg/L	2.0	0.200	U	0.200	U	0.200	U	0.020	U	0.020	U	0.051	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
gamma-Chlordane	µg/L	2.0	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.051	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chlordane	µg/L	2.0	NA		NA		NA		NA		NA		NA		0.130	U	0.500	U	0.15	U	0.32	U	0.29	U	0.30	U	0.29	U	0.29	U	0.15	U	0.15	U
gamma BHC (Lindane)	µg/L	0.20	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.010	U	0.026	U	0.050	U	0.007	U	0.011	U	0.0096	U	0.010	U	0.0095	U	0.0096	U	0.0051	U	0.0051	U
Metals (Total)																																		
Arsenic	µg/L	10	5	U	5.0	U	5	U	5.0	U	5	U	3	U	**2.3**	J	4.0	U	**1.7**	**J**	3.0	U	3.0	U	3.0	UJ	3.0	U	3.0	U	3.0	U	3.0	U
Chromium	µg/L	100	10	U	10	U	10	U	10	U	10	U	5	U	5.0	U	10.0	U	4.0	U	4.0	U	4.0	U	4.0	UJ	4.0	U	4.0	U	4.0	U	4.0	U
Iron	µg/L	NS	50	U	**110**		50	U	**80**		**260**	**J**	50	U	**118**		**378**		**300**		**94**		50	U	**64**	**J**	**25**	**J**	50	U	**130**	**J**	**34**	**J**
Lead	µg/L	15	10	U	10	U	10	U	10	U	**2**	**J**	2.5	U	2.5	U	5.0	U	10	U	10.0	U	10	U	2.5	UJ	10	U	10.0	U	10	U	10	U
Manganese	µg/L	NS	10	U	**6.0**	**J**	10	U	**3.0**	**J**	**20**		7.5	U	7.5	U	**10.4**	**J**	**11**		**5.1**	**J**	3.0	U	**2.7**	**J**	**2.2**	**J**	3.0	U	**4.9**	**J**	3.0	U
General Chemistry																																		
Total Cyanide	mg/L	0.20	**0.002**	**J**	**0.004**	**J**	0.005	U	0.005	U	**0.0020**	**J**	0.0041	U	0.0011	U	0.0100	U	0.005	U	0.0050	U	0.0050	U	0.0050	U	**0.0032**	**J**	0.0050	U	0.0050	U	0.0050	U
Nitrate/Nitrite (as N)	mg/L	NS	**0.38**		**0.38**		**0.43**		**0.47**		**0.6**		**0.46**		**1.1**		**1.9**		**2.9**		**3.8**		**2.1**		**3.3**		**1.3**		**0.92**		**0.47**		**0.82**	
Chemical Oxygen Demand	mg/L	NS	20	U	**11**	**J**	**13**	**J**	20	U	20	U	10	U	15	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	20	U	20	U
Water Quality Parameters																																		
pH	std units	NS	**6.51**		**6.44**		**6.3**		**6.46**		**4.83**		**6.43**		**6.21**		**6.40**		**8.11**		**6.35**		**5.86**		**6.42**		**6.42**		**6.38**		**6.5**		**6.3**	
Oxidation-Reduction Potential	mV	NS	**106.4**		**195.9**		**219.6**		**145.4**		**235.6**		**181**		**218**		**134**		**-173.9**		**81.4**		**209.7**		**138.9**		**74.7**		**213.1**		**89**		**190**	
Turbidity	NTU	NS	**3.02**		**3.90**		**2.4**		**3.70**		**18.90**		**3.21**		**131**		**15**		**7.4**		**8.5**		**8.7**		**4.4**		**2.29**		**12.9**		**12**		**7.6**	

Notes:

0.333	= Detection
0.333	= Above monitoring cri

J = Estimated result
NA = Not analyzed
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Q = Qualifier
U = The target analyte was not detected at or above the lat
UJ = Estimated non-detect
ND = non-detect
µg/L = microgram per liter
mg/L = milligram per liter
mV = millivolts
µS/cm = microsiemens per centimeter
NTU - nephelometric turbidity units

Table 6-10
Devens Consolidation Landfill Historical Groundwater Data - LFM-03-07
Main Post, Former Fort Devens Army Installation, Massachusetts

LFM-99-07/ LFM-03-07 (5/22/06)	Units	Monitoring Criteria	Spring 2003	Q	Fall 2003	Q	Spring 2004	Q	Fall 2004	Q	Spring 2005	Q	Spring 2006	Q	Spring 2007	Q	Spring 2008	Q	Fall 2008	Q	Spring 2009	Q	Fall 2009	Q	Spring 2010	Q	Fall 2010	Q	Spring 2011	Q	Fall 2011	Q
Extractable Petroleum Hydrocarbons (EPH)																																
Naphthalene	µg/L	140	1.0	U	5.4	U	2.4	U	2.1	U	10.0	U	0.2	BJ	0.46	U	0.417	U	0.426	U	10	U	NA		0.412	U	0.400	U	0.400	U	0.400	U
Pesticides																																
Aldrin	µg/L	0.50	0.0064	U	0.0067	U	0.0067	U	0.0070	U	0.05	UJ	0.05	U	0.020	U	0.024	UJ	0.021	U	0.023	U	NA		0.021	U	0.020	U	0.020	U	0.020	U
Dieldrin	µg/L	0.10	0.013	U	0.0013	U	0.015	U	0.014	U	0.1	U	0.05	U	0.040	U	0.048	UJ	0.043	U	0.046	U	NA		0.042	U	0.040	U	0.040	U	0.040	U
alpha-Chlordane	µg/L	2.0	0.0064	U	0.0067	U	0.0067	U	0.0070	U	0.05	U	0.05	U	0.020	U	0.024	UJ	0.021	U	0.023	U	NA		0.021	U	0.020	U	0.020	U	0.020	U
gamma-Chlordane	µg/L	2.0	0.0064	U	**0.0053**	**J**	0.0067	U	0.0070	U	0.05	U	0.05	U	0.020	U	0.024	UJ	0.021	U	0.023	U	NA		0.021	U	0.020	U	0.020	U	0.020	U
Chlordane	µg/L	2.0	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
gamma-BHC (Lindane)	µg/L	0.20	0.0064	U	0.0067	U	0.0067	U	0.0070	U	0.05	U	0.05	U	0.020	U	0.024	UJ	0.021	U	0.023	U	NA		0.021	U	0.020	U	0.020	U	0.020	U
Metals (Total)																																
Arsenic	µg/L	10	**7.9**		***29.0***	***J***	5.0	U	**1.7**	**J**	4.2	U	2.5	U	**2.3**	**J**	5.0	U	5.0	U	5.0	U	NA		**3.3**	**J**	**2.5**	**J**	5	U	**4.0**	**J**
Chromium	µg/L	100	10	U	**35.0**		**8.10**	**J**	**5.38**	**J**	**7.4**	**J**	10.0	U	10.0	U	10	U	10	U	**2**	**J**	NA		**4.0**	**J**	**2.0**		10	U	10	U
Iron	µg/L	NS	NA		**17000**	**J**	**620**		25	U	**630.0**		50.0	U	50.0	U	50	U	50	U	50	U	NA		**230**		**730**		**20**	**J**	50	U
Lead	µg/L	15	13.0	U	***17.0***	***J***	5.0	U	5.0	U	2.9	U	2.5	U	10.0	U	10	U	10	U	**1.9**	**J**	NA		10	U	10	U	10	U	**3.0**	**J**
Manganese	µg/L	NS	NA		**200.0**	**J**	**14.0**	**J**	**10.0**	**J**	**22.8**		**0.7**	**J**	**0.7**	**J**	10	U	10	U	10	U	NA		**4.4**	**J**	**10**		10	U	10	U
General Chemistry																																
Total Cyanide	mg/L	0.20	0.01	U	**0.004**	**J**	0.01	U	0.010	B	0.01	U	0.05	U	0.01	UJ	0.005	U	0.005	U	0.005	U	NA		**0.0001**	**J**	0.005	U	0.005	U	0.005	U
Nitrate/Nitrite (as N)	mg/L	NS	**1.30**		**2.0**		**0.90**		**1.80**		**1.20**	**J**	**1.47**		**0.9**		**1.30**	**J**	**0.9**		**1.00**		NA		**1.10**		**0.98**		**0.96**		**0.93**	
Chemical Oxygen Demand	mg/L	NS	**86**		**26.0**	**J**	**18**	**J**	50.0	U	31.0	U	10.0	U	18.0	UJ	12	J	20	U	20	U	NA		**9.2**	**J**	20	U	20	U	26	U
Water Quality Parameters																																
pH	std units	NS	**6.00**		**6.27**		**5.54**		**6.15**		**6.15**		**6.22**		**6.06**		**8.14**		**5.95**		**5.96**		NA		**6.37**		**6.38**		**5.84**		**6.14**	
Oxidation-Reduction Potential	mV	NS	NA		**365.5**		**345.3**		**279.0**		**237.5**		**230.3**		**169.0**		**130.0**		**146.0**		**125.1**		NA		**-249.8**		**109.0**		**372.9**		**121.5**	
Turbidity	NTU	NS	NA		**10.90**		**3.52**		**11.70**		**0.25**		**0.49**		**0.50**		**2.00**		**3.4**		**3.2**		NA		**2.0**		**13.90**		**0.59**		**0.46**	

Notes:

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0.333	= Above monitoring criteria

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UJ = Estimated non-detect
ND = non-detect
µg/L = microgram per liter
mg/L = milligram per liter
mV = millivolts
NTU - nephelometric turbidity units

Table 6-10
Devens Consolidation Landfill Historical Groundwater Data - LFM-03-07
Main Post, Former Fort Devens Army Installation, Massachusetts

LFM-99-07/ LFM-03-07 (5/22/06)	Units	Monitoring Criteria	Spring 2012	Q	Fall 2012	Q	Spring 2013	Q	Fall 2013	Q	Spring 2014	Q	Fall 2014	Q	Spring 2015	Q	Fall 2015	Q	Spring 2016	Q	Fall 2016	Q	Spring 2017	Q	Fall 2017	Q	Spring 2018	Q	Fall 2018	Q	Spring 2019	Q	Fall 2019	Q
Extractable Petroleum Hydrocarbons (EPH)																																		
Naphthalene	µg/L	140	0.400	U	NA		0.400	U	NA		0.400	U	NA		5.1	U	NA/Dry		NA/Dry		NA/Dry		1.9	U	1.9	U	1.9	U	5.0	U	1.6	U	NA/Dry	
Pesticides																																		
Aldrin	µg/L	0.50	0.020	U	NA		0.020	U	NA		0.020	U	NA		0.026	U	NA/Dry		NA/Dry		NA/Dry		0.017	U	0.017	U	0.019	U	0.017	U	0.0092	UJ	NA/Dry	
Dieldrin	µg/L	0.10	0.040	U	NA		0.040	U	NA		0.040	U	NA		0.026	U	NA/Dry		NA/Dry		NA/Dry		0.0096	U	0.0096	U	0.0110	U	0.0096	U	0.0051	UJ	NA/Dry	
alpha-Chlordane	µg/L	2.0	0.020	U	NA		0.020	U	NA		0.020	U	NA		NA		NA/Dry		NA/Dry		NA/Dry		NA		NA		NA		NA		NA		NA/Dry	
gamma-Chlordane	µg/L	2.0	0.020	U	NA		0.020	U	NA		0.020	U	NA		NA		NA/Dry		NA/Dry		NA/Dry		NA		NA		NA		NA		NA		NA/Dry	
Chlordane	µg/L	2.0	NA		NA		NA		NA		NA		NA		0.130	U	NA/Dry		NA/Dry		NA/Dry		0.29	U	0.29	U	0.32	U	0.29	U	0.15	UJ	NA/Dry	
gamma-BHC (Lindane)	µg/L	0.20	0.020	U	NA		0.020	U	NA		0.020	U	NA		0.026	U	NA/Dry		NA/Dry		NA/Dry		0.0096	U	0.0096	U	0.0110	U	0.0096	U	0.0051	UJ	NA/Dry	
Metals (Total)																																		
Arsenic	µg/L	10	5	U	NA		5	U	NA		3	U	NA		**2.7**	**J**	NA/Dry		NA/Dry		NA/Dry		3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	NA/Dry	
Chromium	µg/L	100	10	U	NA		10	U	NA		10	U	NA		5.0	U	NA/Dry		NA/Dry		NA/Dry		4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	NA/Dry	
Iron	µg/L	NS	50	U	NA		50	U	NA		**20**	**J**	NA		50	U	NA/Dry		NA/Dry		NA/Dry		**1,900**		75	U	50	U	50	U	50	U	NA/Dry	
Lead	µg/L	15	10	U	NA		10	U	NA		10	U	NA		2.5	U	NA/Dry		NA/Dry		NA/Dry		10	U	2.5	U	10	U	10.0	U	10	U	NA/Dry	
Manganese	µg/L	NS	10	U	NA		10	U	NA		10	U	NA		7.5	U	NA/Dry		NA/Dry		NA/Dry		**110**		**2.3**	J	3.0	U	3.0	U	**1.8**	**J**	NA/Dry	
General Chemistry																																		
Total Cyanide	mg/L	0.20	0.005	U	NA		0.005	U	NA		**0.0001**	**J**	NA		**0.0018**	**J**	NA/Dry		NA/Dry		NA/Dry		**0.0033**	**J**	0.0050	U	**0.0048**	**J**	0.0050	U	0.0050	U	NA/Dry	
Nitrate/Nitrite (as N)	mg/L	NS	**1.0**		NA		**0.87**		NA		**0.99**		NA		**0.930**		NA/Dry		NA/Dry		NA/Dry		**1.7**		**2.7**		**1.8**		**1.3**		**1.2**		NA/Dry	
Chemical Oxygen Demand	mg/L	NS	20	U	NA		**18**	**J**	NA		**11**		NA		15	U	NA/Dry		NA/Dry		NA/Dry		**7.5**	**J**	**6.2**	**J**	**5.0**	**J**	10	U	20	U	NA/Dry	
Water Quality Parameters																																		
pH	std units	NS	**6.52**		NA		**5.76**		NA		**6.27**		NA		**6.16**		NA/Dry		NA/Dry		NA/Dry		**6.04**		**6.17**		**6.23**		**5.71**		**6.3**		NA/Dry	
Oxidation-Reduction Potential	mV	NS	**105.6**		NA		**284.3**		NA		**198.7**		NA		**135.5**		NA/Dry		NA/Dry		NA/Dry		**57.9**		**115.0**		**68.0**		**181.5**		**200**		NA/Dry	
Turbidity	NTU	NS	**0.00**		NA		**0.25**		NA		**0.80**		NA		**0.94**		NA/Dry		NA/Dry		NA/Dry		**4.88**		**3.80**		**3.15**		**1.95**		**11**		NA/Dry	

Notes:

0.333	= Detection
0.333	= Above monitoring c

J = Estimated result
NA = Not analyzed
NS = No Standard
Q = Qualifier
U = The target analyte was not detected at or above tl
UJ = Estimated non-detect
ND = non-detect
µg/L = microgram per liter
mg/L = milligram per liter
mV = millivolts
NTU - nephelometric turbidity units

APPENDIX A
GROUNDWATER FIELD ANALYSIS FORMS

A.1

Spring 2019 LTM Event

AREA OF CONTAMINATION 57

KGS

Groundwater Water Level Measurement Sheet

Project/Site Name: Fort Devens/AOC57 - Spring 2019 **Date :** 04/05/19

Field Team Member: Melissa Miller Brett A **Weather:** 40° Cloudy

Water Level Meter Model: Solinst H_2O Meter model 101

Area	Well ID	Time	DTW (ft bTOC)	DTB (ft bTOC)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition
Area 2	57M-03-01X	1145	13.73	21.15	N	NA	Y	
Area 2	57M-03-02X	12:05	4.52	13.75	N	NA	Y	
Area 2	57M-03-05X	1148	2.45	12.27	N	NA	~~N~~ Y	Tubing bonded
Area 2	57M-03-04X	1153	1.96	12.65	N	NA	N	Iron/Oil Sheen surrounds well
Area 2	57M-03-03X	1155	0.87	11.61	N	NA	Y	Tubing - Bonded
Area 2	57M-03-06X	1150	2.40	14.28	N	NA	N	Bonded Tubing
Area 2	57M-95-05X	1208	14.05	22.84	N	NA	Y	Plant meter
Area 2	57M-95-06X	1192	12.05	24.80	N	NA	Y	
Area 2	57M-95-07X	1200	2.23	58.00	N	NA	Y	
Area 2	57WP-05-01	Unable to locate - appears to be Destroyed						
Area 2	57WP-06-02	1158	0.87	24.73	NA	NA	Y	
Area 3	57M-96-10X	1116	6.21	NA	N	NA	Y	Blockage Various Depths
Area 3	57M-96-12X	1135	4.31	15.24	Y	NA	Y	
Area 3	57M-96-13X	1138	4.16	15.07	N	NA	Y	
Area 3	57P-98-03X	1132	2.30	7.09	NA	NA	Y	
Area 3	57P-98-04X	1128	3.60	6.93	NA	NA	N	Added PVC extension: 2.84'
Area 3	57WP-06-03	1123	0.85	19.50	NA	NA	Y	
(5) Area 3	57M-96-11X	1120	2.74	14.75	Y	NA	Y	Tubing
(5) Area 3	57M-95-03X	1111	9.94	27.50 (19.70)	Y	NA	Y	Tubing
(5) Area 3	57-SW1							

No Gauge

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: S7M-96-11X

Project: Devens LTM
Location: AOC57

Date: 4/8/19
Sampler: B.A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	—		
Well gripper present	✓		
Bolts present			—
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	2.78
Depth to bottom (ft BTOR)	14.75
Pump Set Depth (ft BTOR)	10.0
Screen Interval (ft BTOR)	4.2-14.2
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 0820-0910
Tubing type: LDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): —
Air source: —

Field Instrument (Model/S/N): YSI 650 XL 15A100983
Lamotte 2020we 3711-3513

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0826	200	3.91	6.83	6.11	1010	1.55	166	36.7	cloudy
0830	200	4.14	6.95	6.10	1010	0.96	12.1	34.2	↓
0835	↓	4.14	6.90	6.11	1011	0.78	9.7	31.6	↓
0840	↓	↓	6.88	6.12	1010	0.94	9.1	28.9	↓
0845	↓	↓	6.93	6.13	1010	0.81	9.0	29.2	↓
0850	↓	↓	6.90	6.14	1009	0.83	8.2	28.7	↓
0855	↓	↓	6.89	6.14	1009	0.85	8.0	28.5	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):									

Sampling Details

Sampling ID: S7M-96-11X-SP2419
Sample Time: 0900
Duplicate (Y/N): Y
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: S7M-DUP01-SP2419
Filter Size: —
Dup Time: 0910

Comments

Signature

4/8/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

KGS

Well Identification: 57M-95-03X

Project: Devens LTM
Location: AOC 57
Date: 4/8/19
Sampler: B.A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			—
PVC casing intact	—		
Well gripper present	—		
Bolts present			—
Locked (stickup wells)	—		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	10.05
Depth to bottom (ft BTOR)	19.70
Pump Set Depth (ft BTOR)	15.0
Screen Interval (ft BTOR)	9.49-19.49
Total volume purged (gal)	2.5

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 0710-0820
Tubing type: LDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: —

Field Instrument (Model/S/N): YSI 650XL 15K100983
Lamotte 2020 we 3711-3913

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0720	200	10.10	7.35	6.51	248	2.42	107.5	17.9	cloudy
0725	200	10.10	7.18	6.29	249	1.57	91.7	15.2	cloudy
0730		10.15	7.06	6.12	248	1.21	79.3	12.6	clear
0735		10.15	6.86	6.09	251	1.15	67.3	11.5	clear
0740			6.82	6.09	254	0.79	47.3	9.32	
0745			6.73	6.09	256	0.77	37.2	9.16	
0750			6.72	6.10	258	0.73	25.3	7.14	
0755			6.69	6.12	260	0.65	19.9	7.03	
0800			6.68	6.14	264	0.61	8.4	6.99	
0805			6.64	6.16	264	0.60	7.2	6.93	
0810			6.62	6.17	265	0.60	6.0	7.01	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):									

Sampling Details

Sampling ID: 57M-95-03X-SPR19
Sample Time: 0815
Duplicate (Y/N): N
MS/MSD (Y/N): Y
Field Filtered (Y/N): N
Dup ID: —
Filter Size: —
Dup Time: —

Comments

Signature: [signature]
Date: 4/8/19

AREA OF CONTAMINATION 32/43A

KGS

Project/Site Name: Devens - AOC32/43A Spring 2019 **Date :** 4/8/19

Field Team Member: BrA / ES **Weather:** Rain, 37°F

WLM Model: Solinst 101

Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Spring 2017 DTW	Spring 2017 DTB
32M-92-01X	1107	17.03	26.38	Y	-	Y	Good, DT	17.12	25.81
32M-92-03X	1138	26.65	35.84	Y	-	Y	Good	19.07	35.23
32Z-99-02X (32M-92-02X)	1457	23.50	30.51	Y	-	Y	Good	23.72	**30.21**
32Z-01-05XOB	1451	27.63	35.35	-	N	Y	poor - roadbox full of sand, no seal w/ road	19.14	35.21
32Z-01-06XBR	1118	16.75	28.76	Y	-	Y	Good, DT	17.47	28.42
32Z-01-07XOB	1114	15.08	25.02	Y	-	Y	Good, DT	17.54	24.83
32Z-01-08XOB	1515	17.65	24.38	Y	-	Y	Good	17.77	24.22
32Z-01-09XOB	1146	24.65	33.30	-	Y	Y	Good	25.16	32.89
32Z-01-10XBR	1505	15.46	22.20	-	Y	Y	Good	17.68	21.96
32Z-01-11XBR	1309	DRY	17.05	-	Y	Y	poor - road box full of sand, no seal to road	--	16.87
32Z-01-12XBR	1259	18.95	37.67	-	Y	Y	Good	19.83	36.59
SHL-15	1105	17.25	26.72	Y		Y	Good, DT	17.28	25.47
SHL-25	1450	24.70	36.60	Y		Y	Good	25.44	35.91
32M-01-14XBR	1127	21.72	46.10	Y		Y	Good, DB	17.72	45.89
32M-01-15XBR	1335	19.70	44.28	-	Y	Y	Good	19.86	44.00
32M-01-16XBR	1337	20.65	31.10	-	Y	Y	Good	21.28	27.77
32M-01-13XBR	1344	16.50	23.14	-	Y	Y	Good	21.78	22.86
32M-01-14XOB	1123	23.26	30.10	Y		Y	Good, DB	23.84	29.83
32M-01-17XBR	1351	23.52	54.26	N		Y	Good, no lock	24.09	53.96
32M-01-18XBR	1349	16.42	24.53	-	Y	Y	Good	16.27	23.53
43M-01-16XOB	1430	23.45	33.86	-	Y	Y	Good	23.86	33.67
43M-01-16XBR	1422	23.14	57.10	-	Y	Y	Good	23.76	27.77
43M-01-17XOB	1249	24.95	33.15	-	Y	Y	Good	25.38	31.18
43M-01-17XBR	1250	24.58	57.45	-	Y	Y	Good	25.53	53.96
43M-01-20XOB	1235	24.71	33.40	-	Y	Y	Good	25.24	33.09
3M-01-20XBR	1231	25.57	70.10	-	Y	Y	Good	25.07	70.12

DT = dedicated tubing
DB = dedicated bladder pump

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-17XBR

Project: Devens CTO
Location: AOC 32
Date: 4/9/2019
Sampler: Seiler

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact			X
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)		X	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	23.59
Depth to bottom (ft BTOR)	54.26
Pump Set Depth (ft BTOR)	48.79
Screen Interval (ft BTOR)	43.79 - 53.79
Total volume purged (gal)	7L (1.85 gal)

Sampling Type

Purging Method: Peri
Purge start/stop time: 0757/0903
Tubing type: TLPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): no
Air source: no

Field Instrument (Model/S/N): YSI 556 06C2657 AI
LaMotte 2020t 1116-0719

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0800	150	23.70	10.74	6.60	1,346	1.64	167.9	31.3	Semi-cloudy
0805	150	23.70	10.60	6.77	1,333	1.56	151.9	13.2	Clear
0810	150	23.70	10.56	6.82	1,331	1.47	222.7	10.22	clear
0815	150	23.70	10.49	6.88	1,330	1.40	213.6	5.57	clear
0820	150	23.70	10.37	6.92	1,331	1.35	210.0	5.59	clear
0825	150	23.69	10.33	6.96	1,329	1.29	201.6	3.06	clear
0830	150	23.69	10.31	7.00	1,327	1.25	193.7	3.21	clear
0835	150	23.69	10.40	7.01	1,326	1.23	194.5	3.18	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):									

Sampling Details

Sampling ID: 32M-01-17XBR_SPR19
Sample Time: 0835
Duplicate (Y/N): no
MS/MSD (Y/N): yes
Field Filtered (Y/N): no
Dup ID: —
Filter Size: —
Dup Time: —

Comments

Signature

4/9/2019
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-14X03

Project: Devens LTM
Location: AOC 32/439
Date: 4/9/19
Sampler: B.A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	23.17
Depth to bottom (ft BTOR)	30.10
Pump Set Depth (ft BTOR)	25
Screen Interval (ft BTOR)	
Total volume purged (gal)	2.0

Sampling Type Dedicated
Purging Method Bladder Pump
Purge start/stop time 0845-0930
Tubing type Bonded TLPE
Tubing diameter 1/4" OD
Dedicated pump (Y/N) yes
Air source Nitrogen

Field Instrument (Model/S/N) YSI 650 XL 15K100983
Lamotte 2020we 3711-3913

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0855	100	23.81	9.55	6.151	621	2.06	194.2	43.1	cloudy
0900	100	23.85	9.54	6.24	617	1.10	144.2	35.9	cloudy
0905	↓	23.85	9.53	6.18	620	0.89	64.0	27.3	cloudy
0910	↓	↓	9.57	6.17	624	0.74	21.3	15.6	clear
0915	↓	↓	9.57	6.19	625	0.64	-1.3	11.7	clear
0920	↓	↓	9.64	6.26	624	0.60	-15.0	11.4	↓
0925	↓	↓	9.65	6.27	622	0.56	-15.3	10.9	↓
0930	↓	↓	9.82	6.29	619	0.54	-14.0	10.8	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):									

Sampling Details

Sampling ID: 32M-01-14X03_SP219
Sample Time: 0930
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: —
Filter Size: —
Dup Time: —

Comments

Signature

4/9/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-13xBR

Project: Devens LTM Spring 2019 Date: 4/9/19
Location: AOC 32/43A Sampler: CW

Well Integrity

	Yes	No	N/A
Casing Secure			✓
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	16.45'
Depth to bottom (ft BTOR)	23.05
Pump Set Depth (ft BTOR)	20.00
Screen Interval (ft BTOR)	13.25-23.25
Total volume purged (gal)	~1.25 gal

Sampling Type

Purging Method: Peristaltic Pump Tubing type: TLPE Dedicated pump (Y/N): N
Purge start/stop time: 0800-0845 Tubing diameter: 1/4" Air source: —
Field Instrument (Model/S/N): YSI 650 : 2427 LaMotte: 5708-5014

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0815	100ml/min	16.[illegible]67	8.85	5.80	1481	7.10	192.1	12.30	clear/clear
0820	↓	16.79	8.46	5.84	1497	6.71	194.1	11.90	↓
0825		16.87	8.33	5.86	1503	6.65	190.9	13.30	
0830		16.94	7.92	5.96	1508	6.43	188.2	11.50	
0835		16.98	7.91	6.09	1510	6.36	186.1	11.81	
0840		17.05	7.97	6.16	1508	6.40	182.4	11.79	
0845	↓	17.12	7.95	6.18	1503	6.35	179.3	11.68	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				Y	N	N	N	Y	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 32M-01-13xBR_SPR19
Sample Time: 0845 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: —
Filter Size: — Dup Time: —

Comments Low Recharge Rate, needs to be pumped @ low flow rate; pH 4, turbidity: Variance

Signature

4/9/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-18XBR

Project: Drums LTM Spring 2019 Date: 04/9/19
Location: AOC 32/43A Sampler: EV

Well Integrity

	Yes	No	N/A
Casing Secure			✓
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	16.25'
Depth to bottom (ft BTOR)	23.65'
Pump Set Depth (ft BTOR)	20.00
Screen Interval (ft BTOR)	13.74-23.74
Total volume purged (gal)	~1.25 gal

Sampling Type
Purging Method: Peri Pump Tubing type: TLPE Dedicated pump (Y/N): N
Purge start/stop time: 0935-1015 Tubing diameter: 1/4" Air source: —
Field Instrument (Model/S/N): YSI 650: 2427 Turbidite: 5018-5014

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0945	100 ml/min	16.60	9.33	6.77	1644	6.01	157.4	4.39	clear/clear
0950	"	16.66	9.01	6.77	1642	6.07	167.8	4.62	"
0955	"	16.79	9.46	6.79	1629	5.60	168.0	3.57	"
1000	"	16.86	9.43	6.78	1630	5.58	167.5	3.43	"
1005	"	16.95	9.52	6.79	1630	5.40	167.8	3.58	"
1010	↓	17.00	9.50	6.79	1629	5.32	167.9	3.82	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):			Y	N	N	N	Y		0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 32M-01-18XBR_SPR19
Sample Time: 1010 Duplicate (Y/N): Y MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: 32M-DUP01-SPR19
Filter Size: — Dup Time: 1015

Comments Low recharge rate ; pH 4, turbidity = variance

Signature

4/9/19
Date



DEVENS CONSOLIDATED LANDFILL

KGS

Project/Site Name: Fort Devens/DCL Spring 2019 **Date :** 4/9/19

Field Team Member: BrA, ES **Weather:** Overcast, 37°F

Water Level Meter Model: Solinst 101

Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Notes:	Fall 2017 DTW (ft bTOC)
LFM-99-01A	1155						Could not locate	New in 2019 to gauge	
LFM-99-01B	1155	25.03	34.55	Y	—	Y	Good, 2"PVC, 4"casing	sample if DTW <6.5 ft-bgs	27.36
LFM-99-2A	1205						Could not locate	New in 2019 to gauge	
LFM-99-02B	1205	17.73	26.37	Y	—	Y	Dedicated Tubing Good.	Tubing	20.23
LFM-99-03B	1145	39.81	50.80	Y	—	N		sample if DTW <7.9 ft-bgs	44.2
LFM-99-05A	1130	21.87	30.87	Y	—	Y	Good. Dedicated Tubing	Tubing	25.32
LFM-99-05B	1135	15.88	58.69	Y	—	Y	Good. Dedicated Tubing	sample if DTW <2.4 ft-bgs	23.38
LFM-99-06ARP	1210	15.27	35.19	Y	—	Y	Good. Dedicated tubing	Tubing	17.76
LFM-03-07	1215	18.31	23.38	—	Y	Y	Good Dedicated tubing	Tubing	Dry

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-99-02B

Project: Devens LTM
Location: DCL
Date: 4/10/15
Sampler: ES, BA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	17.60
Depth to bottom (ft BTOR)	26.37
Pump Set Depth (ft BTOR)	22.0
Screen Interval (ft BTOR)	16.50 - 26.50
Total volume purged (gal)	3.5

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 1010-1221
Tubing type: Teflon
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 650XL - 15K100983
Lamotte 2020we - 3711-3913

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1017	200	17.76	8.62	6.55	818	10.05	197.4	21.1	clear
1022	200	17.76	8.45	6.49	818	8.72	200.2	6.34	"
1027	"	"	8.42	6.45	817	8.40	202.0	3.05	"
1032	"	"	8.36	6.43	821	8.71	203.5	1.51	"
1037	"	"	8.35	6.39	825	8.64	204.2	0.86	"
1042	"	"	8.37	6.39	823	8.56	204.3	1.08	"
1047	"	"	8.28	6.38	823	8.61	203.9	0.81	"
1050	↓	↓	8.31	6.38	824	6.66	206.1	0.75	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: LFM-99-02B_SP12
Sample Time: 1050
Duplicate (Y/N): N
MS/MSD (Y/N): Y
Field Filtered (Y/N): N
Dup ID: -
Filter Size: -
Dup Time: -

Comments

BA (EAS)
Signature

4/10/15
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-99-05A

Project: Devens LTM
Location: DCL
Date: 4/4/19
Sampler: B.A, ES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	21.73
Depth to bottom (ft BTOR)	30.87
Pump Set Depth (ft BTOR)	26.0
Screen Interval (ft BTOR)	20.70-30.70
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 1232-1430
Tubing type: Teflon
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 650 XL 15A100553
Lamotte 2020we 3711-3913

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1237	150	21.73	9.34	6.69	562	7.21	53.6	612	
1242	150	21.73	9.38	6.53	553	6.58	64.9	48.2	
1247	150	↓	9.35	6.54	551	6.54	70.1	34.4	
1252	150		9.29	6.53	550	6.53	75.1	14.9	
1257	250		9.35	6.53	547	7.11	78.1	31.1	
1302	250		9.51	6.56	543	7.07	81.6	15.0	
1307	250		9.53	6.53	541	7.06	86.2	10.81	
1312	250		9.59	6.53	541	7.05	89.3	12.44	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N)				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: LFM-99-05A-SP1215
Sample Time: 1312
Duplicate (Y/N): Y
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: LFM-DUP01-SP1215
Filter Size: —
Dup Time: 1317

Comments

Signature

4/05/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

KGS

Well Identification: LFM-99-06ARP

Project: Devens LTM
Location: DCL
Date: 4/10/19
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	15.27
Depth to bottom (ft BTOR)	35.19
Pump Set Depth (ft BTOR)	30.00
Screen Interval (ft BTOR)	20.20 - 35.20
Total volume purged (gal)	4.5

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 0750-0930
Tubing type: Teflon
Tubing diameter: 1/4"OD
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 650XL - 15K100983
Geotechnic 2020ne 3711-3913

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0805	200	15.35	10.27	7.06	1080	7.47	137.5	5.17	clear
0810	200	15.40	9.86	6.58	1085	6.42	138.5	3.99	↓
0815	↓	15.40	9.79	6.50	1086	6.01	139.7	3.56	↓
0820	↓	↓	9.78	6.45	1087	5.27	141.2	3.20	↓
0825	↓	↓	9.78	6.43	1087	5.21	141.7	3.18	↓
0830	↓	↓	9.79	6.43	1087	5.18	142.3	3.09	↓
0835	↓	↓	9.79	6.43	1087	5.20	142.6	3.07	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: LFM-99-06ARP_SPR19
Sample Time: 0835
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: –
Filter Size: –
Dup Time: –

Comments

[signature]
Signature

4/10/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-03-07

Project: Devens LTM
Location: DCL
Date: 4/10/2019
Sampler: Seiler

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad Intact			X
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)			X

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	18.15
Depth to bottom (ft BTOR)	23.38
Pump Set Depth (ft BTOR)	15.9
Screen Interval (ft BTOR)	10.4 - 20.4
Total volume purged (gal)	7L (1.85 gal)

Sampling Type

Purging Method: Peri; Tubing type: ~~FLPE~~ Teflon; Dedicated pump (Y/N): no
Purge start/stop time: 0748/1031; Tubing diameter: 1/4" OD; Air source: —

Field Instrument (Model/S/N): YSI 556 06C2857AI
Lamotte 2020t 1116-0719

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0755	150	18.44	7.02	6.24	1,157	10.76	214.9	overrange	translucent
0800	150	18.46	6.92	6.25	1,155	9.68	224.3	67.0	~~heavy~~ semi-hazy
0805	150	18.47	6.90	6.25	1,159	9.58	219.2	79.1	semi-hazy
0810	150	18.46	6.90	6.26	1,160	9.48	213.3	33.0	mostly clear
0815	150	18.46	6.85	6.27	1,161	9.12	209.5	51.2	mostly clear
0820	150	18.46	6.74	6.29	1,166	9.19	207.4	13.5	clear
0825	150	18.46	6.84	6.28	1,164	9.35	204.2	10.07	clear
0830	150	18.46	6.74	6.30	1,167	9.37	203.3	10.91	clear
0840	150	18.46	6.80	6.30	1,167	9.41	201.4	11.33	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				no	yes	—	no	yes	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: LFM-03-07_SPR19
Sample Time: 0840; Duplicate (Y/N): no; MS/MSD (Y/N): no
Field Filtered (Y/N): no; Dup ID: —
Filter Size: —; Dup Time: —

Comments

Erik Seiler
Signature

4/10/2019
Date

CALIBRATION FIELD FORMS
Spring 2019

Field Instrument Calibration Log

Date: 4/9/19 **Weather:** Overcast, 30's

Project/Site Name: Downs LTM Spring 2019 **Instrument:** YSI 650

Calibrated By: CV **Serial Number:** 2427

Parameters	Solution Expiration Date	AM Calibration Time 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1115	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1439	1413	15.91	1,404	15.24	±10 µS/cm	N
pH (7)	10/2020	6.45	7.00	16.32	6.94	14.58	± 0.3 Ph *	N
pH (4)	3/2020	4.45	4.00	16.39	4.28	15.12	± 0.3 Ph *	Y
pH (10)	02/2020	9.80	10.00	16.45	9.92	14.98	± 0.3 Ph *	N
ORP (240 mv)	10/2019	263.5	240.0	15.52	241.7	15.33	±10 mv	N
Dissolved Oxygen (%)	–	106.3	100.0	14.37	98.2	~~100.0~~ 10.25	-	N
Dissolved Oxygen (mg/L)	–	10.86	10.24	14.37	10.29	10.25	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

CV

4/9/19

Turbidity Instrument Calibration Log

Project/Site Name: Dams LTM Spring 2019 **Instrument:** LaMotte

Calibrated By: CV **Serial Number:** 5708-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/9/19	0.00	0.00	9.86	10.00	0.34	10.52	yes

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature] **Date:** 4/9/19

KGS

Field Instrument Calibration Log

Date: 4/9/2019 **Weather:**

Project/Site Name: Devens LTM **Instrument:** YSI 556 06C2657 AI

Calibrated By: Seiler **Serial Number:**

Parameters	Solution Expiration Date	AM Calibration Time 0630		Cal. Temp. (°C)	PM Post Cal. Check Time 1520	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1308	1413	16.88	4.12 → 4.00	17.60	±10 µS/cm	
pH (7)	10/2020	7.13	7.00	17.21	6.92 → 7.00	17.36	± 0.3 Ph *	
pH (4)	3/2020	3.86	4.00	17.52	1.411 → 1.413	17.10	± 0.3 Ph *	
pH (10)	12/31/2019	10.09	10.01	17.73	10.08 → 10.01	17.32	± 0.3 Ph *	
ORP (240 mv)	10/2019	262.9	240.0	16.96	259.2 → 240.0	17.04	±10 mv	
Dissolved Oxygen (%)	—	102.8%	100.1%	17.43	104.5% → 100.0%	15.77	-	
Dissolved Oxygen (mg/L)							± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)							-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Erich Seiler 4/9/2019

KGS

Field Instrument Calibration Log

Date: 4/10/2019 **Weather:** Overcast, some wind, ≈34°F

Project/Site Name: Devens LTM **Instrument:** YSI 556 ~~DO~~

Calibrated By: Seiler **Serial Number:** 06C2657 AI

Parameters	Solution Expiration Date	AM Calibration Time 0615		Cal. Temp. (°C)	PM Post Cal. Check Time 1410	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	~~11/2019~~ ~~1413~~	1.315	1.413	—	~~1.413~~ 1.501 → 1.413	16.86	±10 µS/cm	yes
pH (7)	10/2020	6.99	7.00	15.23	6.93 → 7.00	16.31	± 0.3 Ph *	no
pH (4)	3/2020	3.97	4.00	15.28	4.07 → 4.00	16.49	± 0.3 Ph *	no
pH (10)	12/31/2019	10.10	10.02	15.41	10.12 → 10.02	16.82	± 0.3 Ph *	no
ORP (240 mv)	10/2019	243.3	240.0	15.59	~~100.7~~ 239.5 → 240.0	16.21	±10 mv	no
Dissolved Oxygen (%)	—	102.8	100.0	15.91	~~99.5~~ 100.7 → 100.1	17.05	-	
Dissolved Oxygen (mg/L)					9.92 → 9.86	17.05	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	760				760		-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Erich Seiler **Date:** 4/10/2019

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM

Instrument: LaMotte 2020t

Calibrated By: Seiler

Serial Number: 1116-0719

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 1.0 NTU	Post-Cal 1.0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/9/2019	0.06	—	8.66	9.78	0.00 ✓	9.78 → 9.98	
4/10/2019	1.22	0.92	8.29	10.03	1.21 → 1.01	8.64 → 9.47	yes
4/12/2019	1.14	0.99	8.30	9.99	0.99 → 1.00	9.66 → 9.90	no

Post Calibration Criteria	
-	±0.5

Notes: Mark Noted Variences on Field Forms

Signature: Erich Seiler

Erich Seiler

Erich Seiler

Date: 4/9/2019

4/10/2019

4/12/2019

KGS

Field Instrument Calibration Log

Date: 4/5/19 **Weather:** Overcast, 28°F

Project/Site Name: Devens LTM AOC50 **Instrument:** YSI 650XL

Calibrated By: BM **Serial Number:** 15K100983

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1350	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/19	1412	1413	13.19	1413	16.72	±10 µS/cm	N
pH (7)	10/20	6.96	7.00	13.62	6.99	16.31	± 0.3 Ph *	
pH (4)	03/20	4.00	4.00	14.00	4.01	16.57	± 0.3 Ph *	
pH (10)	02/20	10.00	10.00	14.33	10.00	17.07	± 0.3 Ph *	
ORP (240 mv)	10/19	242.2	240.0	14.59	240.6	17.21	±10 mv	
Dissolved Oxygen (%)	—	97.0	100	14.16	100.1	16.49	-	
Dissolved Oxygen (mg/L)	—	9.97	10.28	14.16	10.29	16.49	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	760	760	—	760	-	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

4/5/19

Field Instrument Calibration Log

Date: 4/8/19 **Weather:** Rain 37°F

Project/Site Name: Devens LTM **Instrument:** YSI 650 XL

Calibrated By: BA **Serial Number:** 15H100583

Parameters	Solution Expiration Date	AM Calibration Time 0900		Cal. Temp. (°C)	PM Post Cal. Check Time 1130	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1422	1413	17.43	1413	17.21	±10 µS/cm	N
pH (7)	10/20	7.01	7.00	17.50	7.00	17.19	± 0.3 Ph *	|
pH (4)	03/20	4.02	4.00	17.53	3.99	17.38	± 0.3 Ph *	|
pH (10)	02/20	10.02	10.00	17.55	10.01	17.46	± 0.3 Ph *	|
ORP (240 mv)	10/19	234.7	240.0	17.37	239.6	17.30	±10 mv	|
Dissolved Oxygen (%)	—	91.2	100	17.09	99.1	16.81	-	|
Dissolved Oxygen (mg/L)	—	8.80	9.65	17.09	9.63	16.81	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	|
Barometric Pressure (mmHg)	—	760	760	—	760	-	-	↓

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/8/19

Field Instrument Calibration Log

Date: 4/9/19 **Weather:** Overcast

Project/Site Name: Downs KTA **Instrument:** YSI 6820 XL

Calibrated By: B.A **Serial Number:** 15K100983

Parameters	Solution Expiration Date	AM Calibration Time 0620		Cal. Temp. (°C)	PM Post Cal. Check Time ____	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1455	1413	21.10	1410	17.05	±10 µS/cm	N
pH (7)	10/20	6.97	7.00	20.78	7.03	17.21	± 0.3 Ph *	
pH (4)	03/20	4.04	4.00	20.78	4.01	18.34	± 0.3 Ph *	
pH (10)	02/20	9.95	10.00	20.69	10.08	18.37	± 0.3 Ph *	
ORP (240 mv)	10/19	236.1	240.0	20.44	242.9	18.17	±10 mv	
Dissolved Oxygen (%)	—	95.8	100	19.29	95.5	17.00	-	
Dissolved Oxygen (mg/L)	—	8.84	9.22	19.29	9.24	17.00	± 0 5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	760	760	-	760	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/9/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM - AOC 50, 57, 32/43A **Instrument:** Lamotte 2020e

Calibrated By: BrA **Serial Number:** 2211-3513

	Date	AM Calibration Pre-Cal 0 NTU	AM Calibration Post-Cal 0 NTU	AM Calibration Pre-Cal 10 NTU	AM Calibration Post-Cal 10 NTU	PM Post Calibration Check 0 NTU	PM Post Calibration Check 10 NTU	Variance Noted
AOC 50	4/3/19	~~0.11~~ 0.04	0.01	10.9	10.4	0.02	10.2	N
	4/4/19	0.03	0.02	9.84	10.0	0.01	10.0	N
	4/5/19	0.02	0.00	9.92	10.0	0.02	10.1	N
AOC 57	4/8/19	0.01	0.00	9.89	10.3	0.01	10.4	N
AOC 32/43	4/9/19	0.03	0.01	9.96	10.0	0.04	10.0	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature] **Date:** 4/9/19

Field Instrument Calibration Log

Date: 4/10/19 **Weather:** Overcast, 37°F

Project/Site Name: Devers LTM **Instrument:** YSI 650 XL #

Calibrated By: ~~DEC~~ BA **Serial Number:** 15K100583

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1416	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)		1418	1413	16.81	1407	17.50	±10 µS/cm°	N
pH (7)		7.02	7.00	16.42	6.96	17.52	± 0.3 Ph *	
pH (4)		3.99	4.00	16.39	3.99	17.38	± 0.3 Ph *	
pH (10)		9.98	10.00	16.42	9.96	17.30	± 0.3 Ph *	
ORP (240 mv)		241.6	240.6	16.48	240.9	17.28	±10 mv	
Dissolved Oxygen (%)		97.2	100	16.35	98.5	17.55	-	
Dissolved Oxygen (mg/L)		9.64	9.82	16.35	9.36	17.85	± 0.5 mg/L < 0 5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)		760	760	—	760	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer** Brett C 4/10/19 **(Mark Noted Variences on Field Forms)**

KGS

Turbidity Instrument Calibration Log

Project/Site Name: DCI **Instrument:** Lamotte 2020we

Calibrated By: BMA **Serial Number:** 37-11-3913

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/10/19	0.02	0.01	9.86	10.0	0.01	10.2	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: Brett Cook **Date:** 4/10/19

A.2

Fall 2019 LTM Event



DEVENS CONSOLIDATED LANDFILL

Project/Site Name: Fort Devens/DCL Fall 2019 **Date :** 10/4/19

Field Team Member: MM/MS **Weather:** 30-60° cloudy/windy

Water Level Meter Model: Heron Dipper-T

Well ID	Time	2019 DTW (ft bTOR)	2019 DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition	Notes:	2017 DTW (ft bTOR)	2017 DTB (ft bTOR)
LFM-99-01B	0828	27.24	34.60	Y	N	Y	See Well Evaluation Form	sample if DTW <6.5 ft-bgs	27.36	34.33
LFM-99-02B	0820	21.24	26.26	Y	N	Y	See Well Evaluation Form	Tubing	20.23	26.32
LFM-99-03B	0920	43.92	50.67	Y	N	Y	See Well Evaluation Form	sample if DTW <7.9 ft-bgs	44.2	50.72
LFM-99-05A	0911	25.90	30.76	Y	N	Y	See Well Evaluation Form	Tubing	25.32	30.48
LFM-99-05B	0908	23.55	58.48	Y	N	Y	See Well Evaluation Form	sample if DTW <2.4 ft-bgs	23.38	58.72
LFM-99-06ARP	0843	18.31	34.93		N	Y	See Well Evaluation Form	Tubing	17.76	34.84
LFM-03-07	0934	23.14	23.35	N	Y	Y	See Well Evaluation Form	Tubing	Dry	23.36

MM

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Page 1 of 2

KGS

Well Identification: LFM-99-02B

Project: LTM - Fall 2019
Location: Fort Devens, Massachusetts
Date: 10/4/19
Sampler: Michael Spartaine

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact	X		
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)	X		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	21.24
Depth to bottom (ft BTOR)	26.26
Pump Set Depth (ft BTOR)	~23 ft
Screen Interval (ft BTOR)	16.50 - 26.50
Total volume purged (gal)	5.0

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 1000
Tubing type: Teflon
Tubing diameter: 3/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 MDS (15101567)
Hatch 2100Q (1L010C047202)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1010	150	21.35	11.31	6.34	1636	7.97	235.6	0.89	clear
1015	150	21.35	11.20	6.32	1638	7.20	233.4	0.69	clear
1020	150	21.35	11.16	6.32	1635	6.99	226.1	1.00	clear
1025	150	21.35	11.19	6.33	1633	7.00	223.0	1.24	clear
1030	150	21.35	11.22	6.34	1633	6.70	221.3	1.24	clear
10.35	150	21.36	11.18	6.36	1635	6.91	217.5	0.68	clear
1040	150	21.37	11.14	6.36	1636	7.01	214.7	1.28	clear
1045	150	21.38	11.14	6.37	1638	7.05	216.4	0.70	clear
1050	180	21.40	11.14	6.38	1639	7.06	214.5	1.13	clear
1055	180	21.40	11.14	6.39	1636	7.35	210.4	1.26	clear
1100	180	21.42	11.07	6.39	1636	7.62	206.9	0.67	clear
1105	180	21.42	11.02	6.39	1630	7.75	202.1	0.77	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	Y	

Sampling Details

Sampling ID: LFM-99-02B-Fall 19
Sample Time: 1135
Duplicate (Y/N):
MS/MSD (Y/N): Y
Field Filtered (Y/N): N
Dup ID:
Filter Size:
Dup Time:

Comments

[signature]
Signature

10/4/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-99-02B

Project: LTM - Fall 2019 Date: 10/4/19

Location: Fort Devens, Massachusetts Sampler:

Well Integrity See Pg 1

	Yes	No	N/A
Casing Secure			
Concrete Pad intact			
PVC casing intact			
Well gripper present			
Bolts present			
Locked (stickup wells)			

Well Information

Diameter	
Material	PVC
Depth to water (ft BTOR)	
Depth to bottom (ft BTOR)	
Pump Set Depth (ft BTOR)	
Screen Interval (ft BTOR)	16.50-26.50
Total volume purged (gal)	

Sampling Type

Purging Method Peristaltic Tubing type Teflon Dedicated pump (Y/N) N

Purge start/stop time _____ Tubing diameter 1/4" Air source NA

Field Instrument (Model/S/N) YSI 556 MPS (15101567)
HACH 2100Q (16010C047202)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1110	180	21.43	11.00	6.41	1628	8.28	200.9	1.05	clear
1115	180	21.42	10.99	6.41	1626	8.38	198.7	0.78	clear
1120	180	21.42	11.00	6.42	1623	8.54	197.1	0.63	clear
1125	180	21.42	11.01	6.43	1620	9.00	196.0	0.61	clear
1130	180	21.42	11.05	6.43	1618	8.85	195.0	0.36	clear
1135	180	21.42	11.05	6.44	1617	8.73	194.1	0.52	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):		N	N	N	N	N	Y		0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: LFM-99-02B-FAL19

Sample Time: 1135 Duplicate (Y/N): MS/MSD (Y/N): Y

Field Filtered (Y/N): N Dup ID:

Filter Size _____ Dup Time:

Comments _____

Signature

10/4/19

Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

KGS

Well Identification: LFM-99-05A (DUP)

Project: LTM - Fall 2019 DCL
Location: Fort Devens, Massachusetts
Date: 10/8/19
Sampler: BJ

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	25.95
Depth to bottom (ft BTOR)	30.77
Pump Set Depth (ft BTOR)	27
Screen Interval (ft BTOR)	20.70-30.70
Total volume purged (gal)	2.5

Sampling Type

Purging Method: Pen
Purge start/stop time: 0900 - 1045
Tubing type: Teflon
Tubing diameter: 0.17 x 1/4"
Dedicated pump (Y/N): N
Air source: —

Field Instrument (Model/S/N): YSI 556MPS 15F101567
Hach 2100Q 16010C047202

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0910	250	26.00	11.53	6.87	920	7.28	211.9	14.6	clr
0915	250	26.00	11.41	6.45	924	5.84	202.7	10.1	clr
0920	250	26.00	11.35	6.40	923	5.79	199.4	7.42	clr
0925	250	26.00	11.35	6.36	921	5.76	197.4	7.53	clr
0930	250	26.00	11.31	6.35	920	5.64	194.5	7.62	clr
0935	250	26.00	11.25	6.34	919	5.64	191.8	7.60	clr
0940	250	26.00	11.32	6.34	919	5.62	188.9	7.57	clr
0945	250	26.00	11.30	6.34	919	5.61	188.3	7.58	clr
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	Y	N	N	N	

Sampling Details

Sampling ID: LFM-99-05A_FAL19
Sample Time: 0945
Duplicate (Y/N): N/A
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: LFM-DUP01-FAL19
Filter Size: —
Dup Time: 0950

Comments

Signature: [signature]
Date: 10/8/19

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

KGS

Well Identification: LFM-99-06A-RP

Project: LTM - Fall 2019 DCL
Location: Fort Devens, Massachusetts
Date: 10/8/15
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	18.35
Depth to bottom (ft BTOR)	34.94
Pump Set Depth (ft BTOR)	32
Screen Interval (ft BTOR)	2020 - 35.20
Total volume purged (gal)	2.5

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 1120-
Tubing type: Teflon
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): —
Air source: —

Field Instrument (Model/S/N): YSI 556MPS 15F101563
Hach 2100Q 16010C047202

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1130	250	18.42	12.82	6.47	1363	5.88	178.5	3.70	clear
1135	250	18.42	12.98	6.49	1360	5.47	171.4	2.96	clear
1140	250	18.42	12.85	6.51	1364	5.27	166.4	2.31	clear
1145	250	18.42	12.73	6.52	1365	5.29	162.5	2.19	clear
1150	250	18.42	12.69	6.53	1365	5.24	158.9	2.08	clear
1155	250	18.42	12.70	6.53	1365	5.19	157.4	2.10	clear
1200	250	18.42	12.71	6.54	1365	5.20	156.1	2.01	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: LFM-99-06ARP-FALS
Sample Time: 1200
Duplicate (Y/N): —
MS/MSD (Y/N): —
Field Filtered (Y/N): —
Dup ID: —
Filter Size: —
Dup Time: —

Comments

[signature]
Signature

10/8/15
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-03-07

Project: LTM - Fall 2019 DCL
Location: Fort Devens, Massachusetts
Date: 10/16/19
Sampler: [illegible]

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	Dry
Depth to bottom (ft BTOR)	22.72
Pump Set Depth (ft BTOR)	N/A
Screen Interval (ft BTOR)	10.4 - 20.4
Total volume purged (gal)	0

Sampling Type

Purging Method _____ Tubing type _____ Dedicated pump (Y/N) _____
Purge start/stop time _____ Tubing diameter _____ Air source _____

Field Instrument (Model/S/N) _____

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):									0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: _____
Sample Time: _____ Duplicate (Y/N): _____ MS/MSD (Y/N) _____
Field Filtered (Y/N): _____ Dup ID: _____
Filter Size: _____ Dup Time: _____

Comments well is dry

[signature]
Signature

10/16/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: LFM-03-07X

Project: LTM - Fall 2019 DCL
Location: Fort Devens, Massachusetts

Date: 10/8/19
Sampler: BcA

Well Integrity

	Yes	No	N/A
Casing Secure			
Concrete Pad intact			
PVC casing intact			
Well gripper present			
Bolts present			
Locked (stickup wells)			

Well Information

Diameter	
Material	
Depth to water (ft BTOR)	
Depth to bottom (ft BTOR)	
Pump Set Depth (ft BTOR)	
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method _____ Tubing type _____ Dedicated pump (Y/N) _____
Purge start/stop time _____ Tubing diameter _____ Air source _____

Field Instrument (Model/S/N) _____

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):									0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: _____
Sample Time: _____ Duplicate (Y/N): _____ MS/MSD (Y/N) _____
Field Filtered (Y/N): _____ Dup ID: _____
Filter Size: _____ Dup Time: _____

Comments Dry - only 0.20 ft water at bottom

Signature

10/8/19
Date

Monitoring Well Evaluation Form	KGS
Project Name: Devens FALL'19 LTM	**Date:** 10/4/19
Location: DCL	**Time:** 0828
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
LFM-99 — 01B	NA	27.24	34.60	

Well Construction Details

Total Depth (ft) btoc	Ground Elevation (NVGD88)	Screened Interval
34.60	326.20	24.77-34.77

Checklist

Well Material and Diameter:	2" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition

Protective Cover:	G
Well Riser Casing:	G
Well Pad:	G
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	No
Dedicated Equipment Present?	No
Sediment in Well:	No

Monitoring Well Evaluation Form	KGS
Project Name: FALL '19 LTM	Date: 10/4/19
Location: DCL	Time: 0820
Tidally Influenced (yes/no):	Field Crew: Melissa Miller

Field Measurements

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
LFM-99-02B	NA	21.24	26.26	

Well Construction Details

Total Depth (ft) btoc	Ground Elevation (NVGD88)	Screened Interval btoc
26.26	353.03	16.50 - 26.50

Checklist

Well Material and Diameter:	2" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Good
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	Yes, Teflon tubing
Sediment in Well:	NO

Monitoring Well Evaluation Form	KGS
Project Name: Devens, FALL 19 LTM	Date: 10/4/19
Location: DCL	Time: 0920
Tidally Influenced (yes/no):	Field Crew: Melissa Miller

Field Measurements

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
LFM-99-03B	NA	43.92	50.67	Stickup

Well Construction Details

Total Depth (ft) btor	Ground Elevation (NVGD88)	Screened Interval btor
50.67	341.28	40.58 - 49.88

Checklist

Well Material and Diameter:	2" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	
Other (Posts, Tags, Paint, etc.):	no CAP
Standing Water Around Well?	No
Dedicated Equipment Present?	NO
Sediment in Well:	NO

Monitoring Well Evaluation Form	KGS
Project Name: Devens FALL'19 LTM	Date: 10/4/19
Location: DCL	Time: 0911
Tidally Influenced (yes/no):	Field Crew: Melissa Miller

Field Measurements

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
LFM-99-05A	NA	25.90	30.76	STICK UP

Well Construction Details

Total Depth (ft) btor	Ground Elevation (NVGD88)	Screened Interval btor
30.76	315.78	20.70 - 30.70

Checklist

Well Material and Diameter:	2" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	FAIR, Pad is cracked
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	Yes, Teflon
Sediment in Well:	NO

Monitoring Well Evaluation Form

KGS

Project Name: Devens FALL '19 LTM	**Date:** 10/4/19
Location: DCL	**Time:** 0908
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
LFM-99-05B	NA	23.55	58.48	Stick up

Well Construction Details

Total Depth (ft) btoc	Ground Elevation (NVGD88)	Screened Interval btoc
58.48	315.78	53.18 - 57.48

Checklist

Well Material and Diameter:	2" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	G
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	NO.
Sediment in Well:	NO

Monitoring Well Evaluation Form	KGS
Project Name: ~~Fe~~Devens, FALL '19 LTM	Date: 10/4/19
Location: DCL	Time: 0843
Tidally Influenced (yes/~~no~~):	Field Crew: MS

Field Measurements

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
LFM-99-06 ARP	NA	18.34	34.93	Ded Tubing

Well Construction Details

Total Depth (ft) btoc	Ground Elevation (NVGD88)	Screened Interval btoc
34.93	337.04	20.20 - 35.20

Checklist

Well Material and Diameter:	pvc 2"
Well Casing Reference Point:	Yes
Well ID Tag Present?	Yes
Well Secured?	Yes
Photo Taken?	N

Well Condition

Protective Cover:	Yes
Well Riser Casing:	Good
Well Pad:	concrete
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	no
Dedicated Equipment Present?	Ded. Tubing
Sediment in Well:	no

Monitoring Well Evaluation Form	KGS
Project Name: Devens, FALL '19 LTM	Date: 10/4/19
Location: DCL	Time: 0934
Tidally Influenced (yes/no):	Field Crew: Melissa Miller

Field Measurements

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
LFM-03-07	NA	23.14	23.35	Road box

Well Construction Details

Total Depth (ft) btoc	Ground Elevation (NVGD88)	Screened Interval [redacted] bgs
23.35	315.68	10.90 - 20.90

Checklist

Well Material and Diameter:	2" PVC
Well Casing Reference Point:	Yes, high point
Well ID Tag Present?	N
Well Secured?	Y
Photo Taken?	N

Well Condition

Protective Cover:	Y Good
Well Riser Casing:	Good
Well Pad:	Asphalt
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	no
Dedicated Equipment Present?	Yes, tefzel
Sediment in Well:	NO

AREA OF CONTAMINATION 69W

Project/Site Name: Fort Devens/AOC69W Fall 2019 **Date :** 10/2/19

Field Team Member: Chris Kijak (CK) **Weather:** Cloudy - Rainy (70°F)

Water Level Meter Model: Solinst Model 101 (500')

Well ID	Time	2019 DTW (ft bTOC)	2019 DTB (ft bTOC)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition/Notes	2017 DTW (ft-bTOC)	2017 DTB (ft bTOC)
69W-94-13	0759	7.30	16.31	N	N	Y	Good, heavy vegetation	5.35	16.18
69W-94-14	0949	8.42	15.25	N	N	Y	Good	6.03	15.12
ZWM-95-15X	0945	6.33	14.90	N	N	Y	Good	3.99	14.65
ZWM-95-18X	0926	4.56	15.41	N	N	Y	Good	2.67	15.14
ZWM-99-22X	0718	6.63	14.40	N	Y	Y	Good	5.04	14.28
ZWM-99-23X	0814	6.20	15.25	N	N	Y	Good, heavy vegetation now well	4.14	15.28
ZWM-99-24X	0953	6.65	15.99	N	N	Y	Good	3.96	15.78
ZWM-01-25X	0917	6.44	16.12	N	N	Y	Good	4.01	16.04
ZWM-95-17X	1008	15.95	16.46	N	N	Y	Good	15.49	17.03
ZWM-01-26X	0922	7.90	16.19	N	N	Y	Good	5.62	16.11
ZWP-95-01X	0956	6.80	14.40	N	N	Y	Good, no gripper present	4.25	14.48
ZWP-95-02X	0933	5.22	14.47	N	N	Y	Good	2.99	14.47
69W-94-12	0806	5.49	16.03	N	N	Y	Good, [illegible]	6.46	15.65
ZWM-95-16X	0735	6.60	15.59	N	Y	Y	[illegible] Good	6.14	15.11
69WP-08-01	0939	3.62	12.32	N	N	N	No protective cap, well is open	2.42	12.33
69WP-13-01	1017	3.31	6.38	N	N	Y	Good	1.93	6.24
Willow Brook Piezometer								-	-

↑ Cannot locate BTOR BTOR

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-95-15X

Project: LTM - Fall 2019 Date: 10/4/19
Location: Fort Devens, Massachusetts Sampler: CC

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	7.52
Depth to bottom (ft BTOR)	14.95
Pump Set Depth (ft BTOR)	14.0
Screen Interval (ft BTOR)	8.74-18.74
Total volume purged (gal)	~5.25

Sampling Type

Purging Method: Peri-pump Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 1035-1140 Tubing diameter: 1/4" Air source: -

Field Instrument (Model/S/N): YSI 650 MDS : 16100386 HACH 2100Q : 19060C059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1045	300	7.52	13.65	6.12	1.201	3.14	96.4	15.12	Yellow/brown/cl/mw
1050	↓	7.52	13.67	6.13	1225	2.60	90.1	14.59	↓
1055		7.52	13.69	6.05	1,243	2.09	82.9	14.39	
~~10~~1100		7.52	13.70	6.01	1251	1.79	73.4	14.20	
1105		7.52	13.75	5.94	1261	1.57	70.5	13.93	
1110		7.52	13.81	5.85	1.274	1.09	69.9	13.41	
1115		7.52	13.90	5.80	1,291	0.70	67.3	13.02	
1120	↓	7.52	13.94	5.78	1,302	0.61	64.8	12.91	
1125		7.52	14.00	5.77	1,307	0.50	62.9	12.53	
1130		7.52	14.04	5.76	1307	0.44	58.1	12.25	
1135		7.52	14.06	5.76	1,307	0.41	56.3	12.12	
1140	↓	7.52	14.10	5.75	1307	0.42	54.1	12.95	↓
Acceptance Criteria:		**<0.3ft**	**±3%**	**±0.1**	**±3%**	**±10%**	**± 10mv**	**10%**	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):		N	N	N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: ZWM-95-15X_FALL9
Sample Time: 1140 Duplicate (Y/N): N MS/MSD (Y/N): Y
Field Filtered (Y/N): Y* Dup ID: -
Filter Size: 0.45 µm Dup Time: -

Comments Removed LDPE tubing and used HDPE tubing to sample (PFAS). Y* - Field Filtered for metals

Signature

10/4/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-95-17X

Project: LTM - Fall 2019 Date: 10/4/19
Location: Fort Devens, Massachusetts Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	15.98
Depth to bottom (ft BTOR)	16.71
Pump Set Depth (ft BTOR)	16.50
Screen Interval (ft BTOR)	14.20-14.20
Total volume purged (gal)	~2.5

Sampling Type

Purging Method: Peri Pump Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 0800 - 0845 Tubing diameter: 1/4" Air source: -

Field Instrument (Model/S/N): YSI 650 MDS: 16100386 HACH 2100Q: 17060C059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0810	700	15.98	12.00	6.01	914	6.76	201.4	2.76	clear/clear
0815	"	15.98	11.88	5.98	913	6.60	199.5	2.10	"
0820	"	15.98	11.83	5.98	912	6.53	206.5	2.39	"
0825	"	15.98	11.85	5.99	908	6.45	194.7	2.25	"
0830	"	15.98	11.84	5.99	906	6.42	191.2	1.76	"
0835	"	15.98	11.85	6.00	905	6.41	160.4	2.12	"
0840	"	15.98	11.86	6.00	905	6.37	157.1	1.88	"
0845	↓	15.98	11.86	6.00	905	6.34	154.5	2.08	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: ZWM-95-17X_FAL19
Sample Time: 0845 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments LDPE tubing present, took old tubing out and put new HDPE tubing in (for PFAS sampling)

Signature

10/4/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-95-18X

Project: LTM - Fall 2019 Date: 10/2/19
Location: Fort Devens, Massachusetts Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	✓
Locked (stickup wells)		✓	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	4.56
Depth to bottom (ft BTOR)	15.41
Pump Set Depth (ft BTOR)	12.5'
Screen Interval (ft BTOR)	7.44 - 17.44'
Total volume purged (gal)	~2.0

Sampling Type
Purging Method: Peri Pump Tubing type: LDPE Dedicated pump (Y/N): N
Purge start/stop time: 1205 - 1250 Tubing diameter: 1/4" Air source: -

Field Instrument (Model/S/N): YSI 650 MDS: 16100386 Hach 2100Q: 17060C059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1215	150	4.56	15.00	6.10	1.225	8.12	211.1	1.31	clear/clear
1220	↓	4.56	14.84	5.89	1.221	7.85	217.8	0.53	↓
1225		4.56	14.80	5.88	1.213	7.74	210.7	1.01	
1230		4.56	14.83	5.88	1.212	7.71	209.1	0.55	
1235		4.56	14.79	5.88	1.208	7.64	201.6	0.60	
1240		4.56	14.78	5.88	1.207	7.62	200.9	0.53	
1245		4.56	14.79	5.89	1.207	7.70	198.7	0.47	
1250	↓	4.56	14.76	5.89	1.207	7.73	192.3	0.43	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):			N	N	N	N	N		0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: ZWM-95-18X_FALL
Sample Time: 1250 Duplicate (Y/N): N MS/MSD (Y/N): N/
Field Filtered (Y/N): Y* Dup ID: -
Filter Size: 0.45 µm Dup Time: -

Comments Dedicated LDPE tubing present; *FF for metals only

Signature

10/2/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 7WM-99-22X

Project: LTM - Fall 2019 Date: 10/3/19
Location: Fort Devens, Massachusetts Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	6.61
Depth to bottom (ft BTOR)	14.41
Pump Set Depth (ft BTOR)	10.0
Screen Interval (ft BTOR)	4.46 - 14.46
Total volume purged (gal)	~ 3.0

Sampling Type
Purging Method Peri pump Tubing type LDPE Dedicated pump (Y/N) N
Purge start/stop time 0648 - 0735 Tubing diameter 1/4" Air source ~

Field Instrument (Model/S/N) YSI 650 MDS: 16100386 HACH 2100Q: 17060C059312

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0655	200	6.61	19.06	6.14	760	0.68	10.1	8.31	clear / clear
0700	↓	6.61	19.01	6.14	811	0.66	4.9	5.40	↓
0705		6.61	18.97	6.13	848	0.70	3.5	4.94	
0710		6.61	18.90	6.15	1,070	0.52	-12.1	3.99	
0715		6.61	18.88	6.15	1,145	0.45	-18.9	3.82	
0720		6.61	18.74	6.20	1,164	0.41	-21.3	3.50	
0725		6.61	18.70	6.24	1,170	0.40	-24.5	4.01	
0730	↓	6.61	18.68	6.28	1,189	0.39	-27.3	3.93	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Variance Observed (Y/N):			N	N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 7WM-99-22X_FAL19
Sample Time: 0730 Duplicate (Y/N): Y MS/MSD (Y/N): N
Field Filtered (Y/N): Y* Dup ID: 69W-DUP7_FAL19
Filter Size: 0.45 Dup Time: 0735

Comments Dedicated LDPE tubing present; *Y* => only metals sample is FF

Signature

10/3/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-99-23X

Project: LTM - Fall 2019 Date: 10/3/19
Location: Fort Devens, Massachusetts Sampler: Melissa Miller

Well Integrity

	Yes	No	N/A
Casing Secure		X	
Concrete Pad intact	Gravel		
PVC casing intact	X		
Well gripper present		X	
Bolts present			X
Locked (stickup wells)	X		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	6.13
Depth to bottom (ft BTOR)	15.26
Pump Set Depth (ft BTOR)	~10.0
Screen Interval (ft BTOR)	6.63-16.63
Total volume purged (gal)	5.0

Sampling Type

Purging Method: Peristaltic Tubing type: 1/4" LDPE Dedicated pump (Y/N): N
Purge start/stop time: 900/ Tubing diameter: 1/4 Air source: NA

Field Instrument (Model/S/N): YSI 556 MPS (SN 15F01567)
HACH 2100Q (SN 16010610202)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0910	250	6.21	15.90	6.38	1197	0.32	-3.6	27.0	Clear
0915	200	6.22	15.87	6.32	1197	0.35	-1.8	22.2	Clear
0920	150	6.20	15.82	6.28	11.98	0.30	-1.8	6.54	Clear
0925	150	6.20	15.79	6.28	1201	0.34	-3.1	4.98	Clear
0930	150	6.19	15.89	6.28	1199	0.28	-3.3	7.98	Clear
0935	150	6.24	15.94	6.27	1193	0.37	-2.8	6.12	Clear
0940	150	6.20	15.88	6.26	1195	0.35	-2.4	2.87	clear
0945	150	6.21	15.96	6.26	1192	0.34	-1.1	3.46	Clear
0950	150	6.21	16.02	6.26	1190	0.31	3.2	2.59	Clear
0955	150	6.20	16.05	6.26	1188	0.31	5.0	2.46	Clear
1000	150	6.23	16.17	6.26	1189	0.31	6.5	2.40	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	Y	Y	N	Y	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: ZWM-99-23X_FALL9
Sample Time: 1000 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): Y Dup ID:
Filter Size: .45µm Dup Time:

Comments Need a new plug

Signature

10/3/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-99-24X

Project: LTM - Fall 2019
Location: Fort Devens Massachusetts

Date: 10/3/19
Sampler: Michael Spaulding
Melissa Miller

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact	Gravel		
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)		X	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	6.58
Depth to bottom (ft BTOR)	15.92
Pump Set Depth (ft BTOR)	~14FT
Screen Interval (ft BTOR)	5.54 - 15.54 BGL
Total volume purged (gal)	5.0

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 1315
Tubing type: LDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS (SN# 15F10567)
Hach 2100Q (SN# 160100047202)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1320	150	6.62	14.87	6.27	557	4.00	102.8	9.73	Clear
1325	150	6.61	14.80	6.15	560	1.96	107.7	2.84	clear
1330	150	6.62	14.85	6.06	563	1.44	114.6	4.85	clear
1335	150	6.62	14.90	6.01	566	1.28	117.5	3.90	Clear
1340	150	6.62	14.96	5.95	577	1.17	113.8	2.00	Clear
1345	150	6.62	14.96	5.90	583	1.09	110.5	2.16	clear
1350	150	6.62	14.97	5.87	586	1.08	107.0	3.03	clear
1355	150	6.62	15.01	5.85	592	1.01	102.4	2.00	clear
1400	150	6.62	15.01	5.84	593	1.04	99.6	1.71	clear
1405	150	6.62	15.04	5.82	593	0.99	97.8	1.45	Clear
1410	150	6.62	14.99	5.81	592	0.90	95.3	1.95	Clear
1415	150	6.62	15.00	5.80	593	0.90	94.7	1.63	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Variance Observed (Y/N):			N	Y	Y	N	Y		

Sampling Details

Sampling ID: ZWM-99-24X_FA19
Sample Time: 1425
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): Y
Dup ID: N/A
Filter Size: 0.5µm
Dup Time: N/A

Comments

Signature

10/3/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 2WM-99-24X

Project: LTM - Fall 2019 Date: 10/3/19
Location: Fort Devens, Massachusetts Sampler: Michael Stanley
Melissa Miller

Well Integrity See Page 1

	Yes	No	N/A
Casing Secure			
Concrete Pad intact			
PVC casing intact			
Well gripper present			
Bolts present			
Locked (stickup wells)			

Well Information

Diameter	
Material	
Depth to water (ft BTOR)	
Depth to bottom (ft BTOR)	
Pump Set Depth (ft BTOR)	
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method _____ Tubing type _____ Dedicated pump (Y/N) _____
Purge start/stop time _____ Tubing diameter _____ Air source _____

Field Instrument (Model/S/N) _____

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1420	150	6.62	15.05	5.79	591	0.88	93.1	2.31	Clear
1425	150	6.62	15.05	5.79	544	0.78	92.4	1.70	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):			N	Y	Y	N	F		

Sampling Details

Sampling ID 2WM-99-24X_Fall19
Sample Time 1425 Duplicate (Y/N) N MS/MSD (Y/N) N
Field Filtered (Y/N) Y Dup ID N/A
Filter Size: 0.5 um Dup Time N/A

Comments _____

Signature

10/3/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-01-25X

Project: LTM - Fall 2019 Date: 10/2/19
Location: Fort Devens, Massachusetts Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	6.44
Depth to bottom (ft BTOR)	16.12
Pump Set Depth (ft BTOR)	13.5'
Screen Interval (ft BTOR)	8.26-18.26
Total volume purged (gal)	~2.0

Sampling Type
Purging Method: Peri-Pump Tubing type: LDPE Dedicated pump (Y/N): N
Purge start/stop time: 1315-1400 Tubing diameter: 1/4" Air source: —

Field Instrument (Model/S/N): YSI 650 MDS : 11G100381 HACH 2100Q : 17060C059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1325	150	6.44	16.80	5.95	960	1.47	180.5	6.19	clear/clear
1330	↓	6.44	16.73	5.90	964	1.25	180.6	2.72	↓
1335		6.44	16.71	5.89	967	1.01	172.4	2.21	
1340		6.44	16.68	5.88	978	0.82	171.6	2.19	
1345		6.41	16.70	5.86	996	0.89	158.4	1.59	
1350		6.44	16.72	5.85	1,003	0.86	149.1	1.52	
1355		6.44	16.66	5.85	1,013	0.88	144.3	1.43	
1400	↓	6.44	16.67	5.85	1,021	0.88	141.0	1.29	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):			N	N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: ZWM-01-25X_FAL19
Sample Time: 1400 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): Y* Dup ID: —
Filter Size: 0.45µm Dup Time: —

Comments Dedicated LDPE tubing present; *FF for metals only

CV
Signature

10/2/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 69WP-08-01

Project: LTM - Fall 2019 Date: 10/3/19
Location: Fort Devens Massachusetts Sampler: W

Well Integrity

	Yes	No	N/A
Casing Secure		✓	
Concrete Pad intact			✓
PVC casing intact			✓
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)			✓

Well Information

Diameter	1.5"
Material	Steel
Depth to water (ft BTOR)	3.62"
Depth to bottom (ft BTOR)	12.32
Pump Set Depth (ft BTOR)	12
Screen Interval (ft BTOR)	10-13
Total volume purged (gal)	~3.0

Sampling Type
Purging Method: Peri Pump Tubing type: LDPE Dedicated pump (Y/N): N
Purge start/stop time: 0930- Tubing diameter: 1/4" Air source: —

Field Instrument (Model/S/N): YSI 650 MDS: 16100386 HACH 2100Q: 17060C059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0945	200	4.15	14.41	6.56	1,115	0.70	-44.1	194	clear/silver
0950	1	4.16	14.41	6.53	1,122	0.54	-41.6	186	
0955		4.17	14.44	6.49	1,124	0.50	-34.1	170	
1000		4.17	14.44	6.45	1,127	0.46	-28.0	129	
1005		4.18	14.44	6.42	1,130	0.40	-24.3	70	
1010		4.19	14.43	6.41	1,132	0.38	-21.0	31	
1015		4.20	14.44	6.39	1,135	0.36	-19.6	29	
1020		4.21	14.44	6.38	1,136	0.35	-19.1	30	
1025	✓	4.22	14.43	6.39	1,136	0.35	-19.0	29	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 69WP-08-01_FAL19
Sample Time: 1025 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): Y* Dup ID: —
Filter Size: 0.45 µm Dup Time: —

Comments No tubing present, used LDPE tubing; Y*=Field Filtered for metals

Signature

10/3/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 69WP-13-01

Project: LTM - Fall 2019 Date: 10/3/19
Location: Fort Devens, Massachusetts Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact			✓
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)			✓

Well Information

Diameter	1.5"
Material	Steel
Depth to water (ft BTOR)	3.30
Depth to bottom (ft BTOR)	12.70
Pump Set Depth (ft BTOR)	12
Screen Interval (ft BTOR)	10-13
Total volume purged (gal)	~3.0 gal

Sampling Type

Purging Method: Peri Pump Tubing type: LDPE Dedicated pump (Y/N): N
Purge start/stop time: 1145- Tubing diameter: 1/4" Air source: —

Field Instrument (Model/S/N): YSI 650 MDS: 11G100384 HACH 2100Q: 17060C059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1200	150	4.10	11.49	6.50	1,125	0.95	-70.4	560	black / opaque
1205	↓	4.14	11.41	6.45	1,119	0.55	-60.1	522	black / opaque
1210		4.16	11.36	6.42	1,113	0.29	-46.4	417	black / opaque
1215		4.17	11.33	6.38	1,111	0.32	-38.6	246	Dark gray / cloudy
1220		4.17	11.29	6.36	1,110	0.33	-36.0	184	↓
1225		4.18	11.25	6.34	1,109	0.42	-28.9	111	↓
1230		4.19	11.18	6.33	1,108	0.42	-25.1	89.8	↓
1235		4.19	11.15	6.31	1,107	0.43	-20.8	52.2	Light gray / cloudy
1240		4.19	11.13	6.29	1,107	0.44	-19.0	28.7	↓
1245		4.20	11.14	6.28	1,106	0.45	-17.8	24.0	clear / clear
1250		4.20	11.14	6.28	1,106	0.46	-17.5	23.4	↓
1255	↓	4.21	11.14	6.27	1,105	0.46	-17.2	24.0	↓
Acceptance Criteria:		**<0.3ft**	**±3%**	**±0.1**	**±3%**	**±10%**	**± 10mv**	**10%**	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: 69WP-13-01_FALL9
Sample Time: 1255 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): Y* Dup ID: —
Filter Size: 0.45 µm Dup Time: —

Comments No tubing present; Y* => Field Filtered for metals

Signature

10/3/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 66W-94-13

Project: LTM - Fall 2019 Date: 10/3/19
Location: Fort Devens, Massachusetts Sampler: Michael Spaulding
Melissa Miller

Well Integrity

	Yes	No	N/A
Casing Secure		X	
Concrete Pad intact	gravel		
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)		X	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	7.40
Depth to bottom (ft BTOR)	16.43
Pump Set Depth (ft BTOR)	~11.4
Screen Interval (ft BTOR)	4.09-14.09
Total volume purged (gal)	5.0

Sampling Type

Purging Method: Peristaltic Tubing type: LDPE Dedicated pump (Y/N): N
Purge start/stop time: 1034 1058 Tubing diameter: 1/4 in Air source: N/A
Field Instrument (Model/S/N): YSI 556 MPS (SN # 15F101567)
Hach 2100Q (SN# 16010C043202)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1050	200	7.46	17.57	6.52	2510	0.25	-22.1	17.0	clear
1055	200	7.46	17.51	6.53	2508	0.22	-26.7	15.1	clear
1100	200	7.42	17.51	6.54	2504	0.22	-28.2	16.6	clear
1105	150	7.41	17.51	6.54	24.87	0.17	-30.0	14.9	clear
1110	150	7.41	17.45	6.54	2473	0.16	-28.7	13.3	clear
1115	150	7.41	17.44	6.55	2454	0.15	-26.6	13.8	clear
1120	150	7.41	17.47	6.55	2441	0.17	-25.0	12.6	clear
1125	150	7.41	17.53	6.55	2420	0.16	-25.7	13.9	clear
1130	150	7.41	17.58	6.56	2422	0.15	-24.4	10.5	clear
1135	150	7.41	17.57	6.56	2415	0.15	-26.5	8.97	clear
1140	150	7.41	17.52	6.56	2412	0.15	-26.4	9.29	clear
1145	150	7.41	17.52	6.56	2401	0.16	-26.3	8.65	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):			N	Y	Y	N	Y		

Sampling Details

Sampling ID: 66W-94-13_Fall 19
Sample Time: 1205 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): Y Dup ID: N/A
Filter Size: Dup Time: N/A

Comments

Signature

10/3/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 69[illegible]-94-13

Project: LTM - Fall 2019
Location: Fort Devens, Massachusetts

Date: 10/3/19
Sampler: Natural Groundwater
Melissa Miller

Well Integrity See Pg 1

	Yes	No	N/A
Casing Secure			
Concrete Pad intact			
PVC casing intact			
Well gripper present			
Bolts present			
Locked (stickup wells)			

Well Information

Diameter	
Material	
Depth to water (ft BTOR)	
Depth to bottom (ft BTOR)	
Pump Set Depth (ft BTOR)	
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method _____ Tubing type _____ Dedicated pump (Y/N) _____
Purge start/stop time _____ Tubing diameter _____ Air source _____

Field Instrument (Model/S/N) _____

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1150	150	7.41	17.57	6.56	2401	0.14	-27.8	7.17	clear
1155	150	7.41	17.58	6.57	2392	0.15	-28.8	6.52	clear
1200	150	7.41	17.58	6.57	2393	0.16	-25.7	6.34	clear
1205	150	7.41	17.60	6.57	2375	0.16	-26.2	6.46	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Variance Observed (Y/N):		N	Y	Y	N	Y			

Sampling Details

Sampling ID: 69[illegible]-94-13_Fall19
Sample Time: 1205 Duplicate (Y/N): N MS/MSD (Y/N) N
Field Filtered (Y/N): Y Dup ID: N/A
Filter Size: _____ Dup Time: N/A

Comments _____

[illegible]
Signature

10/3/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 69W-94-14

Project: LTM - Fall 2019 Date: 10/4/19
Location: Fort Devens, Massachusetts Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		✓
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present		✓	✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	8.63
Depth to bottom (ft BTOR)	15.29
Pump Set Depth (ft BTOR)	14.0
Screen Interval (ft BTOR)	7.98-17.98
Total volume purged (gal)	~2.5

Sampling Type

Purging Method: Peri Pump Tubing type: LDPE Dedicated pump (Y/N): N
Purge start/stop time: 1225 - 1305 Tubing diameter: 1/4" Air source: —

Field Instrument (Model/S/N): YSI 650 MDS: 16J100386 HACH 2100Q: 17060C059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1230	200	8.63	15.73	5.68	1980	1.03	95.3	8.46	clear/clear
1235	↓	8.63	15.75	5.65	1,999	0.70	93.9	7.10	↓
1240		8.63	15.76	5.65	2,004	0.58	92.0	6.33	
1245		8.63	15.75	5.65	2,007	0.62	90.6	5.36	
1250		8.63	15.77	5.65	2,023	0.66	88.7	5.65	
1255		8.63	15.75	5.65	2,032	0.65	88.3	5.01	
1300		8.63	15.75	5.65	2,034	0.61	88.2	4.97	
1305	↓	8.63	15.74	5.65	2,035	0.62	88.1	4.87	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 69W-94-14_FAL19
Sample Time: 1305 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): Y* Dup ID: —
Filter Size: 0.45 µm Dup Time: —

Comments Dedicated LDPE tubing present; * Y* => Field filtered for metals bottle only

Signature

10/4/19
Date

Monitoring Well Evaluation Form

KGS

Project Name: Fort Dorms AOC 69W Fall LTM 2019	**Date:** 10/2/19
Location: AOC 69W	**Time:** 0718
Tidally Influenced (yes/no): No	**Field Crew:** CV

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
ZWM-99-22X	NA	6.63	14.40	Roadbox

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
~~14.40~~ N/A	226.89	~~5.04 - 14.28~~ 4.63 - 14.63

Checklist	
Well Material and Diameter:	PVC, 2"
Well Casing Reference Point:	Y
Well ID Tag Present?	NO
Well Secured?	~~NO~~ no, lock not present
Photo Taken?	~~NO~~ NO

Well Condition	
Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	N/A
Standing Water Around Well?	No
Dedicated Equipment Present?	yes, LDPE tubing present
Sediment in Well:	yes, around risir (not a problem)

Monitoring Well Evaluation Form	KGS
Project Name: Fort Devens AOC 69W Fall LTM 2019	**Date:** 10/2/19
Location: AOC 69W	**Time:** 0735
Tidally Influenced (yes/no): No	**Field Crew:** AV

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
ZWM-95-16X	NA	6.60	15.59	Roadbox

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
~~15.59~~ N/A	228.21	~~6.11-15.11~~ 6.3-16.3

Checklist	
Well Material and Diameter:	PVC, 4"
Well Casing Reference Point:	Yes
Well ID Tag Present?	yes
Well Secured?	~~yes~~ No, lock not present
Photo Taken?	N/A
Well Condition	
Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	N/A
Standing Water Around Well?	No
Dedicated Equipment Present?	No tubing present
Sediment in Well:	yes, around pvc riser

Monitoring Well Evaluation Form	KGS
Project Name: Fort Devens AOC 69W Fall LTM 2019	Date: 10/2/19
Location: AOC 69W	Time: 0759
Tidally Influenced (yes/no): No	Field Crew: CV

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
69W-94-13	NA	7.30	16.31	Stick up

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
— N/A	224.5	3-13

Checklist	
Well Material and Diameter:	PVC, 4"
Well Casing Reference Point:	Yes
Well ID Tag Present?	Yes
Well Secured?	No, lock not present
Photo Taken?	N/A
Well Condition	
Protective Cover:	~~Yes~~ ✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	No
Dedicated Equipment Present?	Yes, LOPE tubing present
Sediment in Well:	No

Monitoring Well Evaluation Form				
Project Name: Fort Devens AOC 69W Full LTM 2019			**Date:** 10/2/19	
Location: AOC 69W			**Time:** 0806	
Tidally Influenced (yes/no): No			**Field Crew:**	
Field Measurements BTOR				
Well ID	**PID Reading (PPM)**	**Depth to Water (feet)**	**Total Well Depth (feet)**	**Comments**
69W-94-12	NA	5.49	16.03	Stickup
Well Construction Details BGS				
Total Depth (ft)		**Ground Elevation (NVGD88)**	**Screened Interval**	
N/A		225.65	3-13	

Checklist	
Well Material and Diameter:	PVC, 2"
Well Casing Reference Point:	yes
Well ID Tag Present?	Yes
Well Secured?	No lock present
Photo Taken?	N/A
Well Condition	
Protective Cover:	Mag ✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	N/A
Standing Water Around Well?	No
Dedicated Equipment Present?	No tubing present
Sediment in Well:	No

Monitoring Well Evaluation Form

KGS

Project Name: Fort Devens AOC 69W Fall LTM 2019	**Date:** 10/2/19
Location: AOC 69W	**Time:** 0814
Tidally Influenced (yes/no): No	**Field Crew:** CV

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
2WM-99-23X	NA	6.20	15.25	Stickup

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
N/A	223.4	3-13

Checklist	
Well Material and Diameter:	PVC, 2"
Well Casing Reference Point:	yes
Well ID Tag Present?	yes
Well Secured?	No lock, no well ~~plug~~ gripper
Photo Taken?	N/A

Well Condition	
Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	N/A
Standing Water Around Well?	No
Dedicated Equipment Present?	yes, LDPE tubing present
Sediment in Well:	No

Monitoring Well Evaluation Form				
Project Name: Fort Dorms AOC 69W Fall LTM 2019			Date: 10/2/19	
Location: AOC 69W			Time: 0917	
Tidally Influenced (yes/no): no			Field Crew: CV	
Field Measurements BTOR				
Well ID	**PID Reading (PPM)**	**Depth to Water (feet)**	**Total Well Depth (feet)**	**Comments**
ZWM-01-25R	NA	6.44	16.12	SHclup
Well Construction Details BGS				
Total Depth (ft)		**Ground Elevation (NVGD88)**	**Screened Interval**	
N/A		222.58	4-14	
Checklist				
Well Material and Diameter:	PVC, 2"			
Well Casing Reference Point:	yes			
Well ID Tag Present?	yes			
Well Secured?	~~yes~~ no, lock not present			
Photo Taken?	no			
Well Condition				
Protective Cover:	~~yes~~ Good			
Well Riser Casing:	Good			
Well Pad:	✓			
Other (Posts, Tags, Paint, etc.):	NA			
Standing Water Around Well?	No			
Dedicated Equipment Present?	yes, LDPE tubing present			
Sediment in Well:	no			

Monitoring Well Evaluation Form	KGS
Project Name: Fort Devens AOC 69W Fall LTM 2019	Date: 10/2/19
Location: AOC 69W	Time: 0922
Tidally Influenced (yes/no): No	Field Crew: CV

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
2WM-01-26X	NA	2.90	16.19	Stickup

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
N/A	224.36	4-14

Checklist	
Well Material and Diameter:	PVC, 2"
Well Casing Reference Point:	YES
Well ID Tag Present?	~~YES~~ NO
Well Secured?	~~YES~~ NO, lock not present
Photo Taken?	NO

Well Condition	
Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	YES, LDPE tubing present
Sediment in Well:	NO

Monitoring Well Evaluation Form	
Project Name: Fort Devens AOC 69W Full LTM 2019	**Date:** 10/2/19
Location: AOC 69W	**Time:** 0926
Tidally Influenced (yes/no): No	**Field Crew:** CV

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
2WM-95-18X	Na	4.56	15.41	Stickup

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
N/A	219.83	3-13

Checklist	
Well Material and Diameter:	PVC, 4"
Well Casing Reference Point:	yes
Well ID Tag Present?	yes
Well Secured?	~~yes~~, no, lock not present
Photo Taken?	No
Well Condition	
Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	No
Dedicated Equipment Present?	yes, LDPE tubing present
Sediment in Well:	No

Monitoring Well Evaluation Form	KGS
Project Name: Fort Barnes AOC 69W Fall LTM	Date: 10/2/19
Location: AOC 69W	Time: 0933
Tidally Influenced (yes/no): No	Field Crew: CW

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
ZWP-95-02X	NA	5.22	14.47	Stickup

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
N/A	219.91	9.5-11.5

Checklist	
Well Material and Diameter:	PVC, 1"
Well Casing Reference Point:	Yes
Well ID Tag Present?	Yes
Well Secured?	No lock present
Photo Taken?	No
Well Condition	
Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	No
Dedicated Equipment Present?	no tubing present
Sediment in Well:	No

Monitoring Well Evaluation Form	KGS
Project Name: Fort Dix AOC 69W Full LTM 2019	**Date:** 10/2/19
Location: AOC 69W	**Time:** 0939
Tidally Influenced (yes/no): No	**Field Crew:** CV

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
69WP-08-01	NA	3.62	12.32	Stickup

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
N/A	N/A	10-13

Checklist	
Well Material and Diameter:	~~PVC~~ Steel, 1.5"
Well Casing Reference Point:	No
Well ID Tag Present?	No, matches with map location
Well Secured?	No, no lock or protective cap
Photo Taken?	No
Well Condition	
Protective Cover:	No cover/cap
Well Riser Casing:	✓
Well Pad:	~~✓~~ N/A
Other (Posts, Tags, Paint, etc.):	N/A
Standing Water Around Well?	No
Dedicated Equipment Present?	No tubing present
Sediment in Well:	No

Monitoring Well Evaluation Form	KGS
Project Name: Fort Stevens AOC 69W Fall LTM 2019	Date: 10/2/19
Location: AOC 69W	Time: 0945
Tidally Influenced (yes/no): No	Field Crew: CV

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
26 ZWM-95-15X	NA	6.33	14.90	stick up

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
N/A	~~AGM~~ 222.14	3-13

Checklist	
Well Material and Diameter:	PVC, 4"
Well Casing Reference Point:	yes
Well ID Tag Present?	yes
Well Secured?	no lock present
Photo Taken?	No

Well Condition	
Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	no
Dedicated Equipment Present?	yes, LDPE tubing pmt
Sediment in Well:	NO

Monitoring Well Evaluation Form	KGS
Project Name: Fort Devens AOC 69W Fall LTM 2019	Date: 10/2/19
Location: AOC 69W	Time: 0949
Tidally Influenced (yes/no): No	Field Crew: CW

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
69W-94-14	NA	8.42	15.25	SW clamp

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
N/A	224.73	3-13

Checklist

Well Material and Diameter:	2", PVC
Well Casing Reference Point:	yes
Well ID Tag Present?	yes
Well Secured?	no lock present
Photo Taken?	No

Well Condition

Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	no
Dedicated Equipment Present?	yes, the LDPE tubing present
Sediment in Well:	no

Monitoring Well Evaluation Form				
Project Name: Fort Devens AOC 69W Full LTM 2019			Date: 10/2/19	
Location: AOC 69W			Time: 0953	
Tidally Influenced (yes/no): No			Field Crew: CV	
Field Measurements BTOR				
Well ID	**PID Reading (PPM)**	**Depth to Water (feet)**	**Total Well Depth (feet)**	**Comments**
ZWM-99-24X	NA	6.65	15.99	SHclear

Well Construction Details		
Total Depth (ft)	**Ground Elevation (NVGD88)**	**Screened Interval**
N/A	222.83	2.5-12.5

Checklist BGS	
Well Material and Diameter:	PVC, 2"
Well Casing Reference Point:	yes
Well ID Tag Present?	yes
Well Secured?	no lock present
Photo Taken?	no
Well Condition	
Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	no
Dedicated Equipment Present?	yes, LDPE tubing present
Sediment in Well:	no

Monitoring Well Evaluation Form	KGS
Project Name: Fort Devens AOC 69W Fall LTM 2019	Date: 10/2/19
Location: AOC 69W	Time: 0956
Tidally Influenced (yes/no): No	Field Crew: CV

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
ZWP-95-01X	NA	6.80	14.40	Stickup

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
N/A	223.63	

Checklist ~~BES~~

Well Material and Diameter:	PVC, 1"
Well Casing Reference Point:	yes
Well ID Tag Present?	no
Well Secured?	yes; no gripper present
Photo Taken?	no
Well Condition	
Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	no
Dedicated Equipment Present?	yes, LDPE tubing present
Sediment in Well:	no

Monitoring Well Evaluation Form	KGS
Project Name: Fort Devens AOC 69W Fall LTM 2019	Date: 10/2/19
Location: AOC 69W	Time: 1008
Tidally Influenced (yes/no): No	Field Crew: CV

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
ZWM-95-17X	NA	15.95	16.46	SW clip

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
N/A	235.27	12.2-22.2

Checklist	
Well Material and Diameter:	PVC, 2"
Well Casing Reference Point:	yes
Well ID Tag Present?	yes
Well Secured?	no lock present
Photo Taken?	no
Well Condition	
Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	✓
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	no
Dedicated Equipment Present?	yes, LDPE tubing present
Sediment in Well:	No

Monitoring Well Evaluation Form	KGS
Project Name: Fort Devens AOC 69W Full LTM 2019	**Date:** 10/2/19
Location: AOC 69W	**Time:** 1017
Tidally Influenced (yes/no): no	**Field Crew:** CV

Field Measurements BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
69WP-13-01	NA	2.31	6.38	stickup

Well Construction Details BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
N/A	N/A	

Checklist

Well Material and Diameter:	Steel 1.5"
Well Casing Reference Point:	no
Well ID Tag Present?	no
Well Secured?	no lock present
Photo Taken?	no

Well Condition

Protective Cover:	✓
Well Riser Casing:	✓
Well Pad:	NA
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	no
Dedicated Equipment Present?	no tubing present
Sediment in Well:	no

Monitoring Well Evaluation Form

KGS

Project Name: Ft. Devens - AOC 43G FALL 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 0840
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements ft BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
43GPZ-19-05	NA	9.59	15.02	

Well Construction Details ft BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval

Checklist	
Well Material and Diameter:	1" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	

Well Condition	
Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Good
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	no
Dedicated Equipment Present?	no
Sediment in Well:	no

Monitoring Well Evaluation Form

KGS

Project Name: Ft. Devens - AOC 43G FALL 2019	**Date:** 10/21/19
Location: AOC 43G	**Time:** 0830
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements ft bTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
43GP2-19-04	NA	9.62	13.60	

Well Construction Details ~~ft~~ bgs

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
12		2 - 12

Checklist	
Well Material and Diameter:	PVC 1"
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	

Well Condition	
Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Good
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	NO
Sediment in Well:	no

AREA OF CONTAMINATION 43G

Project/Site Name: Fort Devens/AOC 43G Fall 2019 **Date :** 10/2/19

Field Team Member: Melissa Miller **Weather:** 70°F cloudy

Water Level Meter Model: Heron - Dipper T 200ft

Well ID	Time	2019 DTW (ft bTOR)	2019 DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition/Notes	2017 DTW (ft bTOR)	2017 DTB (ft bTOR)
AAFES-2	1115	25.40	33.42	Y	N	Y	G/Rust Hinge D.T.	25.5	33.57
AAFES-5	1125	23.48	29.93	N	Y	Y	Good - D. Tubing	23.53	29.83
AAFES-6R	1110	21.78	27.00	N	N	Y	Good/ D. Tubing	21.87	26.68
AAFES-7	1140	10.80	17.18	Y	N	N	Good/D. Tubing	11.41	17.00
XGM-93-02X	1140	20.20	37.40	N	Y	Y	Good/D Tubing	30.96	37.52
XGM-94-04X	1105	21.55	31.00	Y	N	Y	Good/ D. Tubing	21.94	31.17
XGM-94-06X	1032	24.60	30.10	N	N	Y	Good	-	-
XGM-94-07X	1020	21.52	29.75	Y	N	Y	D. Tubing /Good	21.76	29.36
XGM-94-08X	1050	27.50	36.02	Y	N	Y	Good / D. Tubing	27.82	36.06
XGM-94-10X	1057	26.65	33.90	Y	N	Y	Good/ D. Tubing	26.71	34.92
XGM-97-12X	1130	27.18	33.78	Y/N	Y	Y	Good / D Tubing	27.22	33.87
43GPZ-19-01	0952	18.60	19.00	N	Y	Y	GOOD	-	-
43GPZ-19-02	1000	28.50	28.90	N	Y	Y	GOOD.	-	-
43GPZ-19-03	0945	24.30	24.60	N	Y	Y	Good	-	-
43GPZ-19-04	0830	9.62	13.60	Y	N	Y	Good	-	-
43GPZ-19-05	0840	9.59	15.02	N	Y	Y	GOOD	-	-
43GPZ-19-06	0855	10.52	13.60	N	Y	Y	GOOD	-	-

Notes:

LTM sampled

DTW - depth to water (water table)
DTB - depth to bottom of well
ft - feet
bTOR - below top of riser

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: AAFES-2

Project: LTM - Fall 2019 Date: 10/2/19
Location: Fort Devens, Massachusetts Sampler: Melissa Miller

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact	Gravel		
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)	X		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	25.40
Depth to bottom (ft BTOR)	37.45
Pump Set Depth (ft BTOR)	28.5
Screen Interval (ft BTOR)	18.3-33.3
Total volume purged (gal)	3.0

Sampling Type

Purging Method: ~~Peri~~ Tubing type: ~~Peri~~ Teflon Dedicated pump (Y/N): N
Purge start/stop time: 1310/1340 Tubing diameter: 1/4" Air source: NA

Field Instrument (Model/S/N): YSI 556 MPS (15F101567)
HACH 2100Q (16010C047202)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1315	200	26.35	13.88	6.87	1870	0.43	-69.9	15.6	Clear
1320	200	26.75	13.83	6.85	1885	0.24	-77.0	13.1	Clear
1325	175	26.75	13.88	6.86	1887	0.19	-91.2	6.56	Clear
1330	175	26.70	14.46	6.83	1926	2.58	-65.3	2.10	Clear
1335	175	26.70	14.45	6.82	1927	2.60	-60.0	2.08	Clear
1340	175	26.70	14.47	6.81	1932	2.62	-57.4	2.06	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 0.616 ml/ft

Sampling Details

Sampling ID: AAFES-2-FAL19
Sample Time: 1340 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID:
Filter Size: NA Dup Time:

Comments

Signature

10/2/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: AAFES-5

Project: LTM - Fall 2019 Date: 11/1/19
Location: Fort Devens, Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact		✓	
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	22.22
Depth to bottom (ft BTOR)	29.95
Pump Set Depth (ft BTOR)	25
Screen Interval (ft BTOR)	15.22-30.50
Total volume purged (gal)	~~4.0~~ 3.0

Sampling Type

Purging Method: Peri. Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 0755-0905 Tubing diameter: 1/4"OD Air source: NA

Field Instrument (Model/S/N): 451 556405 15F101567
Hach 21008 160C01047202

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0810	125	23.40	13.91	5.32	819	5.74	218.4	58.6	clear
0815	100	23.50	13.68	5.35	3697	8.42	215.4	51.7	clear
0820	100	23.50	13.77	6.46	4526	8.36	210.2	36.1	clear
0825	100	23.55	13.81	5.51	4570	8.04	207.2	19.8	clear
0830	100	23.60	13.81	5.59	4620	7.45	202.9	15.7	clear
0835	100	23.70	13.88	5.64	4511	7.14	200.0	12.8	clear
0840	100	23.75	13.89	5.66	4395	7.00	198.7	8.14	clear
0845	100	23.80	13.83	5.67	4432	6.81	198.1	7.43	clear
0850	100	23.85	13.84	5.67	4401	6.72	197.8	5.13	↓
0855	100	23.86	13.86	5.67	4390	6.70	197.4	4.72	
0900	100	23.88	13.85	5.68	4386	6.68	196.7	4.70	
0905	100	23.90	13.81	5.69	4381	6.62	196.2	4.68	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: AAFES-5-FALL9
Sample Time: 0905 Duplicate (Y/N): Yes (PFAS) MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: 43G-DUP-110119
Filter Size: — Dup Time: 0910

Comments: PFAS only

Signature

11/1/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: AAFES-7

Project: LTM - Fall 2019 456
Location: Fort Devens Massachusetts
Date: 10/14/2019
Sampler: E. Seiler

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact	X		
PVC casing intact	X		
Well gripper present		X	
Bolts present			X
Locked (stickup wells)	X		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	11.24
Depth to bottom (ft BTOR)	27.0
Pump Set Depth (ft BTOR)	11.7
Screen Interval (ft BTOR)	6.7 - 16.7
Total volume purged (gal)	2.43

Sampling Type

Purging Method: Peri.
Purge start/stop time: 1153/
Tubing type: 1/4" ODE
Tubing diameter: HDPE
Dedicated pump (Y/N): no
Air source: —

Field Instrument (Model/S/N): YSI 650 MDS # 11F100386
HACH 170600C059242

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1158	300	14.11	13.74	6.58	2157	2.55	207.1	37.3	clear
1203	100	14.88	13.66	6.40	2147	3.78	181.5	49.2	clear
1208	100	14.89	13.75	6.39	2113	6.64	161.4	29.2	clear
1213	100	15.44	13.57	6.34	2280	6.64	142.9	20.3	clear
1218	100	16.04	13.50	6.36	2340	7.35	126.0	80.4	hazy
1223	100	16.40	13.41	6.32	2311	5.91	123.1	60.9	hazy
1228	100	16.74	13.44	6.35	2275	7.35	112.8	39.3	clear
1233	100	16.75	13.58	6.38	2263	8.54	108.8	15.2	clear
1238	100	16.75	13.71	6.39	2186	9.47	105.8	9.22	clear
1243	100	16.75	13.76	6.39	2267	9.53	106.5	5.94	clear
1248	100	16.75	13.80	6.39	2272	9.58	115.2	7.73	clear
1253	100	16.75	13.83	6.39	2247	9.56	160.6	4.81	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):									

Sampling Details

Sampling ID: AAFES-7_FAL19
Sample Time: 1409
Duplicate (Y/N): no
MS/MSD (Y/N): no
Field Filtered (Y/N): no
Dup ID: —
Filter Size: —
Dup Time: —

Comments

Signature

10/14/2019
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: AAFES-7

Project: LTM - Fall 2019 436
Location: Fort Devens, Massachusetts
Date: 10/14/2019
Sampler: E. Seiler

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)	✓		~~✓~~

Well Information

Diameter	~~2"~~ 2"
Material	~~PVC~~ PVC
Depth to water (ft BTOR)	~~13.53~~ 11.24
Depth to bottom (ft BTOR)	27.0
Pump Set Depth (ft BTOR)	11.7
Screen Interval (ft BTOR)	6.7 - 16.7
Total volume purged (gal)	2.43

Sampling Type

Purging Method: peri.
Purge start/stop time: 1153/
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): no
Air source: —

Field Instrument (Model/S/N): YSI 560 MDS #11G100386
HACH 1706QC054342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1258	100	16.75	13.90	6.38	2260	9.62	237.5	3.22	Clear
1303	100	16.75	13.95	6.38	2254	9.58	242.0	4.04	clear
* 1404	100	12.37	13.83	6.35	2297	5.94	193.4	6.57	clear
1409	100	13.51	13.59	6.29	2276	5.63	168.1	3.64	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				NO	NO	NO	NO	NO	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: AAFES-7_FAL19
Sample Time: 1409
Duplicate (Y/N): no
MS/MSD (Y/N): no
Field Filtered (Y/N): no
Dup ID: —
Filter Size: —
Dup Time: —

Comments * stopped Pump @ 1305, allow recharge to 11.61', restart pump @ 1450
↳ recharge rate was ≈ 1' per 30-35 minutes

Signature: E. Seiler
Date: 10/14/2019

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: XGM-93-02X

Project: LTM - Fall 2019 43E
Location: Fort Devens, Massachusetts
Date: 10/9/19
Sampler: BA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	
Locked (stickup wells)			✓

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	30.62
Depth to bottom (ft BTOR)	37.45
Pump Set Depth (ft BTOR)	34
Screen Interval (ft BTOR)	28-38
Total volume purged (gal)	2.5

Sampling Type
Purging Method: 1.75" Bladder
Purge start/stop time: 0900-1010
Tubing type: Teflon Lined Bonded
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: N2

Field Instrument (Model/S/N): YSI 556MPS 15F1015167
Hach 2100Q 16010C047202

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0915	200	30.81	13.19	6.54	2411	1.14	-82.7	29.7	cloudy
0920	200	30.94	13.20	6.56	2415	0.68	-84.5	18.1	clear
0925	150	30.99	13.19	6.57	2412	0.54	-81.7	16.3	clear
0930	150	31.15	13.22	6.59	2399	0.48	-70.4	14.7	clear
0935	150	31.20	13.20	6.59	2386	0.47	-61.1	16.2	clear
0940	150	31.21	13.23	6.59	2375	0.45	-56.3	16.0	clear
0945	150	31.25	13.20	6.59	2345	0.42	-50.9	15.5	clear
0950	150	31.29	13.21	6.58	2340	0.40	-49.1	15.3	clear
0955	150	31.30	13.20	6.58	2338	0.39	-45.2	15.1	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):			N	N	N	N	N	N	

Sampling Details

Sampling ID: XGM-93-02X-FALL9
Sample Time: 0955
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: —
Filter Size: —
Dup Time: —

Comments

Signature

10/9/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: XGM-94-04X

Project: LTM - Fall 2019 Date: 10/2/19
Location: Fort Devens Massachusetts Sampler: Melissa Miller

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact	Gravel		
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)	X		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	21.55
Depth to bottom (ft BTOR)	31.10
Pump Set Depth (ft BTOR)	25.00
Screen Interval (ft BTOR)	20.5-30.5
Total volume purged (gal)	3.0

Sampling Type

Purging Method: Peristaltic Tubing type: Teflon lined Dedicated pump (Y/N): N
Purge start/stop time: 1215/1255 Tubing diameter: 1/4" Air source: NA

Field Instrument (Model/S/N): YSI 556 MPS (15F101567)
HACH 2100Q (16010C047202)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1220	250	22.20	14.51	7.00	2010	1.45	-63.3	4.36	Clear
1225	200	22.12	14.49	7.08	2000	1.39	-69.4	3.71	Clear
1230	200	22.10	14.02	7.09	2006	1.13	-83.2	3.62	Clear
1235	175	22.11	14.06	7.15	1985	0.54	-84.7	2.92	Clear
1240	175	22.11	14.11	7.16	1965	0.34	-79.3	2.00	Clear
1245	175	22.10	14.02	7.15	1956	0.22	-79.4	1.45	Clear
1250	175	22.10	14.03	7.14	1956	0.21	-78.9	1.43	Clear
1255	175	22.10	14.05	7.14	1956	0.20	-78.0	1.42	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: XGM-94-04X-FAL19
Sample Time: 1255 Duplicate (Y/N): N MS/MSD (Y/N): Y
Field Filtered (Y/N): N Dup ID:
Filter Size: NA Dup Time:

Comments

Signature

10/2/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: XGM-94-06X

Project: LTM - Fall 2019 436 Date: 10/14/2019
Location: Fort Devens, Massachusetts Sampler: E. Seiler

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact			X
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)		X	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	24.97
Depth to bottom (ft BTOR)	30.15
Pump Set Depth (ft BTOR)	22
Screen Interval (ft BTOR)	17-27
Total volume purged (gal)	~~2.88~~ 2.5

Sampling Type

Purging Method: Perri. Tubing type: HDPE Dedicated pump (Y/N): no
Purge start/stop time: ~~1002~~/1115 1015 Tubing diameter: 1/4" OD Air source: —
Field Instrument (Model/S/N): YSI 650 MDS #11G10@J86
HACH 1706C059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1018	300	25.90	13.25	6.81	1723	0.85	210.0	72.1	Hazy
1023	300	26.20	13.29	6.85	1715	0.72	-8.3	50.4	Hazy
1028	150	26.26	13.37	6.86	1710	0.72	-8.7	49.8	Hazy
1033	150	26.35	13.42	6.87	1702	0.79	-9.3	62.6	Hazy, Some suspended sediment
1038	150	26.41	13.49	6.88	1697	0.84	-9.7	53.9	" "
1043	150	26.46	13.53	6.89	1697	0.85	-10.1	48.2	" "
1048	150	26.51	13.58	6.89	1699	0.83	-10.1	27.4	" "
1053	150	26.57	13.62	6.89	1697	0.82	-10.2	14.1	clear
1058	150	26.58	13.71	6.88	1694	0.77	-9.8	7.88	Clear
1103	150	26.59	13.95	6.87	1690	0.82	-8.8	5.02	Clear
1108	150	27.00	13.99	6.84	1679	0.83	-7.6	3.87	Clear
1113	160	27.02	14.02	6.83	1682	0.87	-6.6	2.50	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):			No	No	No	No	No	No	

Sampling Details

Sampling ID: ~~XGM~~ XGEM-94-06X_FAL19
Sample Time: 1113 Duplicate (Y/N): no MS/MSD (Y/N): no
Field Filtered (Y/N): no Dup ID: —
Filter Size: — Dup Time: —

Comments

Eric Seiler
Signature

10/14/2019
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: XGM-94-07X

Page 1 of 2

Project: LTM - Fall 2019 ADE 4DC
Location: Fort Devens, Massachusetts
Date: 10/14/19
Sampler: Michael Sullivan

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	21.20
Depth to bottom (ft BTOR)	29.77
Pump Set Depth (ft BTOR)	~ 25 ft
Screen Interval (ft BTOR)	17-27
Total volume purged (gal)	4.0

Sampling Type

Purging Method: Peristaltic
Tubing type: LDPE
Dedicated pump (Y/N): N
Purge start/stop time: 0928-1113
Tubing diameter: 1/4"
Air source: N/A

Field Instrument (Model/S/N): YSI EXO MPS (14A100702)
(another 2020 WC (926-1811)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0945	140	22.31	15.25	7.98	2861	0.21	-23.0	31	Cloudy / Murky
0950	140	22.40	15.42	7.73	2851	0.27	-22.0	66.3	Cloudy / Murky
0955	140	22.52	15.83	7.58	2882	0.54	-22.6	61.3	Slightly Cloudy
1000	140	22.65	15.96	7.44	2818	0.23	-22.7	44.7	Lightly Cloudy
1005	120	22.77	16.15	7.35	2804	0.20	-21.5	30.7	Cloudy
1010	120	22.83	16.28	7.25	2779	0.21	-20.1	22.5	Cloudy
1015	120	22.89	16.15	7.15	2760	0.18	-17.0	20.2	Clear w/ floating matter
1020	120	22.941	16.16	7.13	2749	0.27	-16.5	17.7	Slightly Cloudy
1025	120	23.003	16.32	7.09	2740	0.17	-15.9	16.1	Slightly Cloudy
1030	120	23.10	16.27	7.04	2726	0.19	-17.0	14.8	Clear w/ floating matter
1035	120	23.15	16.24	7.01	2720	0.16	-12.7	11.5	Clear
1040	120	23.21	16.36	6.97	2709	0.17	-18.2	11.68	Clear
Acceptance Criteria:		**<0.3ft**	**±3%**	**±0.1**	**±3%**	**±10%**	**± 10mv**	**10%**	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):			N	Y	N	N	Y		

Sampling Details

Sampling ID: XGM-94-07X_FAL19
Sample Time: 1113
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: N/A
Filter Size: N/A
Dup Time: N/A

Comments

Signature

10/14/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Page 2 of 2

Well Identification: XGM-94-07X

Project: LTM - Fall 2019 Nov 436 Date: 10/16/19
Location: Fort Devens, Massachusetts Sampler: [illegible] Sperlazza

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4" PVC
Material	PVC
Depth to water (ft BTOR)	21.70
Depth to bottom (ft BTOR)	29.77
Pump Set Depth (ft BTOR)	~25ft
Screen Interval (ft BTOR)	17-27
Total volume purged (gal)	4.0

Sampling Type

Purging Method: Peristaltic Tubing type: LDPE Dedicated pump (Y/N): N
Purge start/stop time: 0928-1113 Tubing diameter: 1/4" Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS (14A100102)
Lamotte 2020 we (926-1811)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1045	120	23.24	16.45	6.92	2700	0.23	-17.2	10.13	clear
1050	120	23.32	16.44	6.83	2685	0.39	-17.2	9.39	clear
1055	120	23.38	16.48	6.83	2685	0.43	-18.7	10.25	clear
1100	120	23.44	16.60	6.80	2681	0.00	-19.3	9.17	clear
1105	120	23.46	16.69	6.78	2672	0.07	-19.3	9.67	clear
1110	120	23.49	16.69	6.76	2656	0.05	-19.1	9.70	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):			Y	Y	N	N	Y		0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: XGM-94-07X-FAL19
Sample Time: 1113 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: NA
Filter Size: NA Dup Time: NA

Comments

[signature] 10/16/19
Signature **Date**

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: XGM-94-08X

Project: LTM - Fall 2019 AOC 43G
Location: Fort Devens, Massachusetts
Date: 10/14/19
Sampler: M. Wood, S. Paulo, L.

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad Intact	Gravel		
PVC casing intact	✓		
Well gripper present	PVC Cap		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	27.68
Depth to bottom (ft BTOR)	35.66
Pump Set Depth (ft BTOR)	~ 30
Screen Interval (ft BTOR)	23.5 - 33.5
Total volume purged (gal)	~ 3.5

Sampling Type

Purging Method: Peristaltic
Tubing type: LDPE
Dedicated pump (Y/N): N
Purge start/stop time: 1155
Tubing diameter: 1/4"
Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS (14A100102)
(Geotech 2020 we (926-1941)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1205	150	27.68	14.11	6.31	1785	0.39	56.0	10.82	clear
1210	150	27.68	14.03	6.41	1787	0.31	54.7	9.42	clear
1215	150	27.69	14.09	6.45	1781	0.23	53.6	10.93	clear
1220	150	27.69	14.07	6.48	1783	0.21	52.5	7.31	clear
1225	150	27.68	14.07	6.50	1788	0.23	51.8	8.25	clear
1230	150	27.69	14.10	6.52	1794	0.19	51.2	7.20	clear
1235	150	27.69	14.15	6.53	1793	0.26	50.8	6.64	clear
1240	150	27.69	14.10	6.53	1794	0.21	50.7	7.11	clear
1245	150	27.69	14.23	6.54	1800	0.19	50.7	8.27	clear
1250	150	27.69	14.37	6.55	1796	0.20	50.7	2.45	clear
1255	150	27.69	14.43	6.56	1800	0.19	50.5	8.17	clear
1300	150	27.69	14.47	6.57	1804	0.24	50.3	4.81	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):			Y	Y	N	N	Y		

Sampling Details

Sampling ID: XGM-94-08X_FALL9
Sample Time: 1310
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: N/A
Filter Size: N/A
Dup Time: N/A

Comments

Signature

10/14/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: XGM-94-08X

Project: LTM - Fall 2019 AOC 43G
Location: Fort Devens, Massachusetts
Date: 10/14/19
Sampler: [illegible]

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	Gravel		
PVC casing intact	✓		
Well gripper present	PVC cap		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	27.58
Depth to bottom (ft BTOR)	35.66
Pump Set Depth (ft BTOR)	~30
Screen Interval (ft BTOR)	23.5 - 33.5
Total volume purged (gal)	~3.5 gal

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 1155 - 1310
Tubing type: LDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS (14A100102)
Lamotte 2020 (926-1811)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1305	150	27.69	14.66	6.58	1803	0.22	50.2	6.31	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				Y	Y	N	N	Y	

Sampling Details

Sampling ID: XGM-94-08X-FAL19
Sample Time: 1310
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: N/A
Filter Size: N/A
Dup Time: N/A

Comments

[signature]
Signature

10/14/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: XGM-97-12X

Project: LTM - Fall 2019 Date: 10/9/19
Location: Fort Devens, Massachusetts Sampler: B+A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact		✓	
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	
Locked (stickup wells)			✓

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	27.3
Depth to bottom (ft BTOR)	33.76
Pump Set Depth (ft BTOR)	30.0
Screen Interval (ft BTOR)	24-34
Total volume purged (gal)	4.0

Sampling Type
Purging Method 1.75" Bladder Tubing type TLPE Bonded Dedicated pump (Y/N) N
Purge start/stop time 1035- Tubing diameter 1/4" OD Air source N_2

Field Instrument (Model/S/N) YSI 556MPS 15F1015**0107
Horiba U10GQ 160106U49702

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1045	150	27.51	14.64	6.80	359	2.54	-0.5	21.7	clear
1050	150	27.57	14.81	6.59	350	1.23	2.2	7.74	clear
1055	150	27.70	14.86	6.44	312	0.83	4.8	6.35	clear
1100	~~150~~ 100	27.79	14.92	6.34	286	0.60	6.3	5.82	clear
1105	100	27.82	14.94	6.31	279	0.51	6.2	5.73	clear
1110	100	27.85	14.93	6.28	271	0.41	3.3	5.40	clear
1115	100	27.86	14.92	6.29	270	0.35	-2.2	5.38	clear
1120	100	27.88	14.92	6.29	275	0.38	-2.9	5.37	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: XGM-97-12X-FALL9
Sample Time: 1120 Duplicate (Y/N): Y MS/MSD (Y/N) N
Field Filtered (Y/N): N Dup ID: XGM-DUP1-FALL9
Filter Size: — Dup Time: 1125

Comments

Signature

10/9/19
Date

Monitoring Well Evaluation Form

KGS

Project Name: Ft. Devens - AOC 43G Fall 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 1140
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements ft BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
XGM-93-02X	NA	29.20	37.40	Road Box

Well Construction Details ft BGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
38	309.80	28 - 38

Checklist

Well Material and Diameter:	4" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	N
Well Secured?	Y
Photo Taken?	N

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	NA
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	Yes Teflon lined
Sediment in Well:	NO

Monitoring Well Evaluation Form	KGS
Project Name: Ft. Devens - AOC 43G Fall 2019	Date: 10/2/19
Location: AOC 43G	Time: 1130
Tidally Influenced (yes/no):	Field Crew: Melissa Miller

Field Measurements ft BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
XGM-97-12X	NA	27.18	33.78	Road Box

Well Construction Details

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
34	Unknown	24-34

Checklist

Well Material and Diameter:	4" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	N
Well Secured?	Y
Photo Taken?	N

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	NA
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	Yes, Teflon Lined
Sediment in Well:	no

Monitoring Well Evaluation Form	KGS
Project Name: Ft. Devens - AOC 43G FALL 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 1125
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements Ft 6 TOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
AAFES-5	NA	23.48	28.93	RoadBox

Well Construction Details 695

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
30.5	300.48	15.5 - 30.5

Checklist	
Well Material and Diameter:	2" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition	
Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	NA
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	Yes, teflon lined
Sediment in Well:	NO

Monitoring Well Evaluation Form

KGS

Project Name: Ft. Devens - AOC 43G FALL 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 1115
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements ft b TOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
AAFES-2	NA	25.40	33.42	Stick up

Well Construction Details 695

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
31.2	299.90	16.2 - 31.2

Checklist	
Well Material and Diameter:	2" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition	
Protective Cover:	Good, but Hinge needs lubricant
Well Riser Casing:	Good
Well Pad:	Gravel
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	Yes, Teflon
Sediment in Well:	no

Monitoring Well Evaluation Form

KGS

Project Name: Ft. Devens - AOC 43G Fall 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 1110
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements ft bTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
AAFES-6R	NA	21.78	27.00	Stick up

Well Construction Details bgs

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
25	296.77	15-25

Checklist	
Well Material and Diameter:	2" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	N
Photo Taken?	N
Well Condition	
Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Gravel
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	No
Dedicated Equipment Present?	Y. Teflon lined
Sediment in Well:	no

Monitoring Well Evaluation Form	KGS
Project Name: Ft. Devens - AOC 43G FALL 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 1105
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements ft btoR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
XGM-94-04X	NA	21.55	31.00	Stick up

Well Construction Details bgs

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
28.2	298.30	18.2-28.2

Checklist	
Well Material and Diameter:	4" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition	
Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Gravel
Other (Posts, Tags, Paint, etc.):	Posts x3
Standing Water Around Well?	NO
Dedicated Equipment Present?	Y, teflon lined
Sediment in Well:	no

Monitoring Well Evaluation Form	KGS
Project Name: Ft. Devens - AOC 43G Fall 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 1057
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements AT BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
XGM-94-10X	NA	26.65	33.90	Stick up

Well Construction Details bGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
31.5	299.60	21.5-31.5

Checklist

Well Material and Diameter:	4" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Gravel
Other (Posts, Tags, Paint, etc.):	Posts x 1
Standing Water Around Well?	NO
Dedicated Equipment Present?	Yes, teflon lined
Sediment in Well:	no

Monitoring Well Evaluation Form	KGS
Project Name: Ft. Devens - AOC 43G Fall 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 1050
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements ft BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
XGM-94-08X	NA	27.50	36.02	Stick up

Well Construction Details bGS

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
33.5	296.40	23.5 – 33.5

Checklist	
Well Material and Diameter:	4" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition	
Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Gravel
Other (Posts, Tags, Paint, etc.):	Post x1
Standing Water Around Well?	no
Dedicated Equipment Present?	Yes, Teflon lined
Sediment in Well:	no

Monitoring Well Evaluation Form	KGS
Project Name: Ft. Devens - AOC 43G FALL 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 1040
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
AAFES-7	NA	10.80	17.18	stick up cap missing

Well Construction Details bgs

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
14.5	256.10	4.5 - 14.5

Checklist

Well Material and Diameter:	2" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	NO

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Good
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	Yes Teflon
Sediment in Well:	NO

Monitoring Well Evaluation Form	KGS
Project Name: Ft. Devens - AOC 43G FALL 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 1032
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements ft & TOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
XGM-94-06X	NA	24.60	30.10	stick up

Well Construction Details

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
	Unknown	unknown

Checklist

Well Material and Diameter:	4" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	N
Photo Taken?	N

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Gravel
Other (Posts, Tags, Paint, etc.):	Posts x 2
Standing Water Around Well?	NO
Dedicated Equipment Present?	NO
Sediment in Well:	NO

Monitoring Well Evaluation Form	KGS
Project Name: Ft. Devens - AOC 43G FALL 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 1020
Tidally Influenced (yes/no):	**Field Crew:** Melissa Moller

Field Measurements At 640R

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
XGM-94-07X	NA	21.52	29.75	STICKUP

Well Construction Details bgs

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
27	242.20	17 – 27

Checklist

Well Material and Diameter:	4" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Gravel
Other (Posts, Tags, Paint, etc.):	Posts x 3
Standing Water Around Well?	No
Dedicated Equipment Present?	Yes
Sediment in Well:	No

Monitoring Well Evaluation Form	KGS
Project Name: Ft. Devens - AOC 43G FALL 2019	Date: 10/2/19
Location: AOC 43G	Time: 0952
Tidally Influenced (yes/no):	Field Crew: Melissa Miller

Field Measurements

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
~~43~~MW-19-01	NA	18.60	19.00	

Well Construction Details

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
19.83		9.83 - 19.83

Checklist

Well Material and Diameter:	1" PVC
Well Casing Reference Point:	Yes
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Good
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	No
Dedicated Equipment Present?	No
Sediment in Well:	no

Monitoring Well Evaluation Form	KGS
Project Name: Ft. Devens - AOC 43G FALL 2019	**Date:** 10/02/19
Location: AOC 43G	**Time:** 1000
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements ft BTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
43GPZ-19-02	NA	28.50	28.90	

Well Construction Details bgs

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval

Checklist	
Well Material and Diameter:	1" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	N

Well Condition	
Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Good
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	No
Dedicated Equipment Present?	No
Sediment in Well:	No

Monitoring Well Evaluation Form

KGS

Project Name: Ft. Devens - AOC 43G Fall 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 0945
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
43GP2-19-03	NA	24.30	29.60	Sediment in well

Well Construction Details

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval

Checklist

Well Material and Diameter:	1" PVC
Well Casing Reference Point:	Yes
Well ID Tag Present?	Yes
Well Secured?	Yes
Photo Taken?	NO

Well Condition

Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Good
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	NO
Sediment in Well:	Yes

Monitoring Well Evaluation Form	KGS
Project Name: Ft. Devens - AOC 43G Fall 2019	**Date:** 10/2/19
Location: AOC 43G	**Time:** 0855
Tidally Influenced (yes/no):	**Field Crew:** Melissa Miller

Field Measurements ft bTOR

Well ID	PID Reading (PPM)	Depth to Water (feet)	Total Well Depth (feet)	Comments
43GP2-19-06	NA	10.52	18.60	

Well Construction Details ft bgs

Total Depth (ft)	Ground Elevation (NVGD88)	Screened Interval
20		10-20

Checklist	
Well Material and Diameter:	1" PVC
Well Casing Reference Point:	Y
Well ID Tag Present?	Y
Well Secured?	Y
Photo Taken?	

Well Condition	
Protective Cover:	Good
Well Riser Casing:	Good
Well Pad:	Good
Other (Posts, Tags, Paint, etc.):	NA
Standing Water Around Well?	NO
Dedicated Equipment Present?	no
Sediment in Well:	Y

CALIBRATION FIELD FORMS
Fall 2019

Field Instrument Calibration Log

Date: 10/2/19 **Weather:** Cloudy, Rainy - 70's (F)

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 650 MDS

Calibrated By: CV **Serial Number:** 11G100356

Parameters	Solution Expiration Date	AM Calibration Time 1040		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm^c)	11/2019	1,234	1,413	22.32	1,406	22.10	±10 µS/cm	N
pH (7)	2/2021	7.08	7.00	22.45	6.95	22.24	± 0.3 Ph *	N
pH (4)	3/2021	3.94	4.00	22.32	4.07	22.41	± 0.3 Ph *	N
pH (10)	2/2021	9.99	10.00	22.43	10.02	22.45	± 0.3 Ph *	N
ORP (240 mv)	12/2019	~~259.0~~ ~~8.29~~	~~240.0~~ ~~8.67~~	~~22.43~~ ~~22.45~~	248.1	22.95	±10 mv	N
Dissolved Oxygen ~~mg/L~~ ~~(%)~~	-	~~8.29~~ ~~95.0~~	~~8.67~~ ~~100.0~~	22.45	8.89	21.14	-	~~N~~
Dissolved Oxygen (%) ~~(mg/L)~~	-	95.0	100.0	22.45	100.0	21.14	± 0.5 mg/L ↑ < 0.5 mg/L for 0 mg/L solution, no negative value	-
Barometric Pressure (mmHg)	-	760	-		760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 10/2/19

Field Instrument Calibration Log

Date: 10/3/19 **Weather:** Cloudy, 50's (°F)

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 680 MDS

Calibrated By: CV **Serial Number:** 16100386

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1345	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1,391	1,413	22.58	1,418	19.90	±10 µS/cm	N
pH (7)	2/2021	7.10	7.00	22.61	7.01	18.88	± 0.3 Ph *	N
pH (4)	3/2021	4.03	4.00	22.59	4.02	19.80	± 0.3 Ph *	N
pH (10)	2/2021	10.01	10.00	22.57	10.01	20.17	± 0.3 Ph *	N
ORP (240 mv)	12/2019	238.6	240.0	22.57	235.1	19.95	±10 mv	N
Dissolved Oxygen (%)	–	98.1	100.0	22.50	100.3	18.50	-	–
Dissolved Oxygen (mg/L)	–	9.38	9.50	22.50	9.87	18.50	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	–

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 10/3/19

Field Instrument Calibration Log

Date: 10/4/19 **Weather:** Partly cloudy, 60's (°F)

Project/Site Name: ~~LTM Fall~~ LTM Fall 2019 **Instrument:** YSI 650 MDS

Calibrated By: CV **Serial Number:** 16100386

Parameters	Solution Expiration Date	AM Calibration Time 0630		Cal. Temp. (°C)	PM Post Cal. Check Time 1345	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	11/2019	1,405	1,413	22.31	1,419	19.99	±10 µS/cm	N
pH (7)	2/2021	7.10	7.00	22.42	6.98	19.81	± 0.3 Ph *	N
pH (4)	3/2021	4.05	4.00	22.50	4.03	20.30	± 0.3 Ph *	N
pH (10)	2/2021	10.02	10.00	22.55	10.05	20.21	± 0.3 Ph *	N
ORP (240 mv)	12/2019	248.1	240.0	22.70	244.5	20.21	±10 mv	N
Dissolved Oxygen (%)	–	101.5	100.0	21.03	100.0	19.71	-	–
Dissolved Oxygen (mg/L)	–	9.98	9.90	21.03	9.56	19.71	± 0.5 mg/L < 0 5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	–

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: CV **Date:** 10/4/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens Fall LTM (AOC 69W)

Instrument: HACH 2100Q

Calibrated By: CV

Serial Number: 17060C059342

	AM Calibration				PM Post Calibration Check				
Date	Pre/Post - Cal 10 NTU	Pre/Post - Cal 20 NTU	Pre/Post - Cal 100 NTU	Pre/Post - Cal 800 NTU	10 NTU	20 NTU	100 NTU	800 NTU	Variance Noted
10/2/19	10.0/10.0	20.2/20	99.8/100	762/800	10.0	19.5	101	825	N/
10/3/19	10.4/10.0	19.8/20	97.7/100	806/800	10.3	20.5	104	807	N
10/4/19	10.4/10.0	20.1/20	102/100	811/800	10.1	20.0	94.5	794	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria			
± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 10/4/19

KGS

Field Instrument Calibration Log

Date: 10/2/19 **Weather:** 70°F / Cloudy – Humid

Project/Site Name: LTM - Fall 2019 43G **Instrument:** YSI 556 MPS

Calibrated By: Melissa Miller **Serial Number:** 15F101567

Parameters	Solution Expiration Date	AM Calibration Time 0720		Cal. Temp. (°C)	PM Post Cal. Check Time 1425	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	02/20	1266	1,413	23.14	1410	22.72	±10 µS/cm	N
pH (7)	03/20	6.98	7.00	23.14	6.87	22.80	± 0.3 Ph *	N
pH (4)	03/21	4.18	4.00	23.10	3.98	22.80	± 0.3 Ph *	N
pH (10)	02/20	10.19	10.03	23.03	9.81	22.80	± 0.3 Ph *	N
ORP (240 mv)	10/22	263.8	240.0	23.23	235.3	22.68	±10 mv	N
Dissolved Oxygen (%)	NA	93.6	100.1	23.13	102.2	22.21	-	N
Dissolved Oxygen (mg/L)	NA	7.99	8.56	23.13	8.89	22.21	± 0 5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	760	—	—	—	NA	NA	-	NA

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Melissa Miller **Date:** 10/2/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Ft. Devens - FALL 2019 LTM

Instrument: HACH 2100Q

Calibrated By: Melissa Miller

Serial Number: 16010C047202

	AM Calibration				PM Post Calibration Check				
Date	Pre/Post - Cal 10 NTU	Pre/Post - Cal 20 NTU	Pre/Post - Cal 100 NTU	Pre/Post - Cal 800 NTU	10 NTU	20 NTU	100 NTU	800 NTU	Variance Noted
10/2/19	10.3/10	20.2/20	100/100	792/800	9.59	19.4	98.5	793	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria			
± 0.5	± 1	± 5	± 40

Signature: Melissa Miller

Date: 10/2/19

KGS

Field Instrument Calibration Log

Date: 10/3/19 **Weather:** 45°F Cloudy/cool

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 556 MPS

Calibrated By: Michael Spurlock **Serial Number:** 19F101567

Parameters	Solution Expiration Date	AM Calibration Time 0750		Cal. Temp. (°C)	PM Post Cal. Check Time 1519	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	2/2020	1362	1413	23.12	1424	20.11	±10 µS/cm	Y
pH (7)	3/2020	7.10	7.00	23.29	6.90	20.11	± 0.3 Ph *	N
pH (4)	3/2021	4.11	4.00	23.75	3.90	20.48	± 0.3 Ph *	N
pH (10)	2/2020	10.04	10.01	23.45	10.11	20.11	± 0.3 Ph *	N
ORP (240 mv)	10/2022	236.5	240.0	23.22	246.6	20.20	±10 mv	N
Dissolved Oxygen (%)	~~105.8~~	105.8	94.9	22.98	96.6	17.85	-	Y
Dissolved Oxygen (mg/L)		9.20	8.64	22.48	9.16	17.85	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	760	—	—	—			-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 10/3/19

Field Instrument Calibration Log

Date: 10/3/19 **Weather:** 50-60° cloudy → clear

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 556 MPS

Calibrated By: Michael Sperling **Serial Number:** 15F101567

Parameters	Solution Expiration Date	AM Calibration Time 0710		Cal. Temp. (°C)	PM Post Cal. Check Time ~~1425~~ 1425	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	2/2020	1431	1413	20.84	1417	21.40	±10 µS/cm	N
pH (7)	3/2020	6.80	7.00	21.01	6.98	21.62	± 0.3 Ph *	N
pH (4)	3/2021	3.89	4.00	21.04	~~4.03~~ 4.02	21.44	± 0.3 Ph *	N
pH (10)	2/2020	10.07	10.01	21.00	10.05	21.55	± 0.3 Ph *	N
ORP (240 mv)	10/2022	252.1	240.0	20.94	235.7	21.49	±10 mv	N
Dissolved Oxygen (%)		98.8	100	20.04	104.6	21.34	-	
Dissolved Oxygen (mg/L)		7.96	9.00	20.04	9.28	21.34	± 0.5 mg/L < 0 5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)		760	—	—			-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 10/4/19

Turbidity Instrument Calibration Log

Project/Site Name: Deveng LTM Fall 2019 **Instrument:** Hach 2100Q

Calibrated By: Michael Spalding **Serial Number:** 16010C 47202

	AM Calibration				PM Post Calibration Check				
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**10 NTU**	**20 NTU**	**100 NTU**	**800 NTU**	**Variance Noted**
10/3/19	9.68/10	19.9/20	101/100	782/800	12.6	~~20~~24.0	110	878	Y
10/4/19	9.54/10	20.7/20	104/100	808/800	10.1	23.1	106	798	Y

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria			
± 0.5	± 1	± 5	± 40

Signature: [signature] **Date:** 10/4/19

KGS

Field Instrument Calibration Log

Date: 10/9/19 **Weather:** 40°F Overcast (Cool)

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 556 MPS

Calibrated By: Melissa Miller **Serial Number:** 14A100102

Parameters	Solution Expiration Date	AM Calibration Time 0850		Cal. Temp. (°C)	PM Post Cal. Check Time 1340	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	03/20	1410	1413	19.35	1410	15.75	±10 µS/cm	N
pH (7)	02/21	7.75	7.00	19.57	6.85	15.94	± 0.3 Ph *	N
pH (4)	03/21	4.07	4.0	19.10	3.89	15.74	± 0.3 Ph *	N
pH (10)	02/21	10.10	10.0	18.98	9.98	15.68	± 0.3 Ph *	N
ORP (240 mv)	10/19	235.5	240.0	19.23	248.2	15.99	±10 mv	N
Dissolved Oxygen (%)	—	103.8	100.0	18.61	95.3	12.12	-	Y
Dissolved Oxygen (mg/L)	—	9.70	9.35	18.61	9.95	12.21	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	760	—	—	NA	—	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Melissa Miller **Date:** 10/9/19

KGS

Field Instrument Calibration Log

Date: 10/10/19 **Weather:** 50°F Partially Cloudy

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 556 MPS

Calibrated By: Melissa Miller **Serial Number:** 14A100102

Parameters	Solution Expiration Date	AM Calibration Time 0740		Cal. Temp. (°C)	PM Post Cal. Check Time 1415	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	03/20	1410	1413	19.55	1405	15.73	±10 µS/cm	N
pH (7)	02/21	7.25	7.00	19.63	6.91	15.89	± 0.3 Ph *	N
pH (4)	03/21	3.99	4.00	19.37	3.98	15.65	± 0.3 Ph *	N
pH (10)	02/21	9.98	10.00	19.10	9.95	15.92	± 0.3 Ph *	N
ORP (240 mv)	~~10/19~~	237.8	240	19.53	237.1	15.77	±10 mv	N
Dissolved Oxygen (%)	—	104.2	100.0	19.10	95.1	13.85	-	N
Dissolved Oxygen (mg/L)	—	9.81	9.45	19.10	9.89	13.85	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	760	—	—	—	—	—	—	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Melissa Miller **Date:** 10/10/19

Turbidity Instrument Calibration Log

Project/Site Name: Ft. Devens, MA FAL'19 LTM

Instrument: Lamotte 2020we

Calibrated By: Melissa Miller

Serial Number: 926-1811

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
10/9/19	0.06	0.00	9.24	9.45	0.71	9.90	N
10/10/19	0.05	0.00	9.68	9.73	0.61	10.00	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature]

Date: 10/10/19

APPENDIX B

LABORATORY ANALYTICAL REPORTS

B.1

Spring 2019 LTM Event

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-167491-2
Client Project/Site: Fort Devens AOC 32

For:
KOMAN Government Solutions, LLC
293 Boston Post Road
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Jerry Lanier

Authorized for release by:
5/18/2019 3:11:15 PM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

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

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

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

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Job ID: 680-167491-2

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: Fort Devens AOC 32

Report Number: 680-167491-2

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 the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 04/12/2019; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt were 0.4º C and 2.6º C.

VOLATILE ORGANIC COMPOUNDS (GC/MS)

Samples 32M-TRIP BLANK (680-167491-2), 32M-01-17XBR_SPR19 (680-167491-7), 32M-01-13XBR_SPR19 (680-167491-8), 32M-01-18XBR_SPR19 (680-167491-9), 32M-DUP01_SPR19 (680-167491-10) and 32M-01-14XOB_SPR19 (680-167491-11) were analyzed for Volatile Organic Compounds (GC/MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/23/2019, 04/24/2019 and 04/27/2019.

Reanalysis of the following sample was performed outside of the analytical holding time to get lower reporting limits: 32M-01-18XBR_SPR19 (680-167491-9).

The following sample(s) were analyzed outside of analytical holding time due to instrument failure which occured during the original run: 32M-01-13XBR_SPR19 (680-167491-8) and 32M-01-14XOB_SPR19 (680-167491-11).

Sample 32M-DUP01_SPR19 (680-167491-10) was run at dilution but was slightly over-dilute. There are quantifiable hits in the sample but they are below the middle of the calibration curve. The sample was re-run at a lower dilution on a 2nd clock over-night but there were multiple QC failures in the batch. There is insufficient hold time to rerun the samples in hold. Elevated reporting limits have been provided.

There were marginal surrogate failures with the QC and sample associated with 680-167491-10. This sample is a dilution for an E flag that is only reporting one analyte that correlates with the original run. The data has been qualified and reported.

32M-DUP01_SPR19 (680-167491-10), (CCV 680-567616/3), (LCS 680-567616/4) and (LCSD 680-567616/5)

Surrogate recovery for the DOD method for the following samples were outside of acceptance limits: 32M-TRIP BLANK (680-167491-2), (LCSD 680-567541/6) and (MB 680-567541/10). There was insufficient hold time remaining to perform a re-extraction; therefore, the data have been reported.

The continuing calibration verification (CCV) analyzed in batch 680-567432 was outside the method criteria for the following analyte(s): Dichlorodifluoromethane. This compound has been identified as a poor performing analyte when using this method. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

The continuing calibration verification (CCV) associated with batch 680-568059 recovered above the upper control limit for Chloromethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

The closing continuing calibration verification (CCVC) associated with batch 680-567432 recovered above the upper control limit for Chloroethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Job ID: 680-167491-2 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

The closing calibration verification (CCVC) associated with batch 680-567541 recovered above the upper control limit for Dichlorodifluoromethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: (CCVC 680-567541/31).

The closing calibration verification (CCVC 680-568059/31) ran outside of the method specific 12 hour window. The sample QC and capping was within acceptable limits therefore; the data has been qualified and reported.

The method blank for preparation batch 567432 contained Carbon disulfide above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

The laboratory control sample (LCS) for analytical batch 680-567541 recovered outside acceptance limits for Dibromomethane, 1,3-Dichloropropane and Chlorobromomethane. There was insufficient sample to perform a re-extraction or re-analysis; therefore, the data have been reported.

The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 680-568059 recovered outside control limits for the following analytes: Chloromethane. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Chloromethane failed the recovery criteria high for the MS/MSD of sample 32M-01-17XBR_SPR19 (680-167491-7) in batch 680-567432. Note that this analyte is a known poor performer when analyzed using this method.

Refer to the QC report for details.

Samples 32M-01-18XBR_SPR19 (680-167491-9)[2X] and 32M-DUP01_SPR19 (680-167491-10)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

METALS (ICP)

Samples 32M-01-17XBR_SPR19 (680-167491-7), 32M-01-13XBR_SPR19 (680-167491-8), 32M-01-18XBR_SPR19 (680-167491-9), 32M-DUP01_SPR19 (680-167491-10) and 32M-01-14XOB_SPR19 (680-167491-11) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 04/17/2019 and analyzed on 04/19/2019.

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

METALS

Samples 32M-01-17XBR_SPR19 (680-167491-7), 32M-01-13XBR_SPR19 (680-167491-8), 32M-01-18XBR_SPR19 (680-167491-9), 32M-DUP01_SPR19 (680-167491-10) and 32M-01-14XOB_SPR19 (680-167491-11) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 04/17/2019 and analyzed on 04/18/2019.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 32

Job ID: 680-167491-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-167491-2	32M-TRIP BLANK	Water	04/09/19 00:00	04/12/19 10:27
680-167491-7	32M-01-17XBR_SPR19	Water	04/09/19 08:35	04/12/19 10:27
680-167491-8	32M-01-13XBR_SPR19	Water	04/09/19 08:45	04/12/19 10:27
680-167491-9	32M-01-18XBR_SPR19	Water	04/09/19 10:10	04/12/19 10:27
680-167491-10	32M-DUP01_SPR19	Water	04/09/19 10:15	04/12/19 10:27
680-167491-11	32M-01-14XOB_SPR19	Water	04/09/19 09:30	04/12/19 10:27

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 32

Job ID: 680-167491-2

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
MA-VPH	MADEP VPH Volatile Petroleum Hydrocarbon	MA DEP	
3010A	Preparation, Total Metals	SW846	TAL SAV
5030B	Purge and Trap	SW846	TAL SAV

Protocol References:

MA DEP = Massachusetts Department Of Environmental Protection

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

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Client: KOMAN Government Solutions, LLC
Job ID: 680-167491-2
Project/Site: Fort Devens AOC 32

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
D	The reported value is from a dilution.
H	Sample was prepped or analyzed beyond the specified holding time
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

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

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 32

Job ID: 680-167491-2

Client Sample ID: 32M-TRIP BLANK
Date Collected: 04/09/19 00:00
Date Received: 04/12/19 10:27

Lab Sample ID: 680-167491-2
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 23:26	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 23:26	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		04/23/19 23:26	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 23:26	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		04/23/19 23:26	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		04/23/19 23:26	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		04/23/19 23:26	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:26	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		04/23/19 23:26	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:26	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		04/23/19 23:26	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		04/23/19 23:26	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 23:26	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		04/23/19 23:26	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		04/23/19 23:26	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		04/23/19 23:26	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		04/23/19 23:26	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		04/23/19 23:26	1
1,3-Dichloropropane	1.0	U Q	1.0	1.0	0.34	ug/L		04/23/19 23:26	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		04/23/19 23:26	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 23:26	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		04/23/19 23:26	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		04/23/19 23:26	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		04/23/19 23:26	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		04/23/19 23:26	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 23:26	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		04/23/19 23:26	1
Acetone	10	U	10	10	7.0	ug/L		04/23/19 23:26	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		04/23/19 23:26	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 23:26	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		04/23/19 23:26	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:26	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		04/23/19 23:26	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 23:26	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		04/23/19 23:26	1
Chlorobromomethane	1.0	U Q	1.0	1.0	0.45	ug/L		04/23/19 23:26	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		04/23/19 23:26	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:26	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 23:26	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		04/23/19 23:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		04/23/19 23:26	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		04/23/19 23:26	1
Dibromomethane	1.0	U Q	1.0	1.0	0.35	ug/L		04/23/19 23:26	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		04/23/19 23:26	1
Dichlorodifluoromethane	1.0	U Q	1.0	1.0	0.60	ug/L		04/23/19 23:26	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 23:26	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		04/23/19 23:26	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:26	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		04/23/19 23:26	1

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 32

Job ID: 680-167491-2

Client Sample ID: 32M-TRIP BLANK

Lab Sample ID: 680-167491-2

Date Collected: 04/09/19 00:00

Matrix: Water

Date Received: 04/12/19 10:27

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		04/23/19 23:26	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:26	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		04/23/19 23:26	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:26	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		04/23/19 23:26	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		04/23/19 23:26	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		04/23/19 23:26	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		04/23/19 23:26	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		04/23/19 23:26	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		04/23/19 23:26	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		04/23/19 23:26	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 23:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 23:26	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		04/23/19 23:26	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 23:26	1
Trichlorofluoromethane	1.0	U Q	1.0	1.0	0.42	ug/L		04/23/19 23:26	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		04/23/19 23:26	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 23:26	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		04/23/19 23:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*74*	*Q*	*81 - 118*		*04/23/19 23:26*	*1*
4-Bromofluorobenzene (Surr)	*92*		*85 - 114*		*04/23/19 23:26*	*1*
Dibromofluoromethane (Surr)	*81*		*80 - 119*		*04/23/19 23:26*	*1*
Toluene-d8 (Surr)	*70*	*Q*	*89 - 112*		*04/23/19 23:26*	*1*

Client Sample ID: 32M-01-17XBR_SPR19

Lab Sample ID: 680-167491-7

Date Collected: 04/09/19 08:35

Matrix: Water

Date Received: 04/12/19 10:27

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 18:41	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 18:41	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		04/23/19 18:41	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 18:41	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		04/23/19 18:41	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		04/23/19 18:41	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		04/23/19 18:41	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 18:41	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		04/23/19 18:41	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 18:41	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		04/23/19 18:41	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		04/23/19 18:41	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 18:41	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		04/23/19 18:41	1
1,2-Dichloroethene, Total	**0.91**	**J**	2.0	1.0	0.74	ug/L		04/23/19 18:41	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		04/23/19 18:41	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		04/23/19 18:41	1
1,3-Dichlorobenzene	**0.45**	**J**	1.0	1.0	0.43	ug/L		04/23/19 18:41	1

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 32

Job ID: 680-167491-2

Client Sample ID: 32M-01-17XBR_SPR19
Date Collected: 04/09/19 08:35
Date Received: 04/12/19 10:27

Lab Sample ID: 680-167491-7
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		04/23/19 18:41	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		04/23/19 18:41	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 18:41	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		04/23/19 18:41	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		04/23/19 18:41	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		04/23/19 18:41	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		04/23/19 18:41	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 18:41	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		04/23/19 18:41	1
Acetone	10	U	10	10	7.0	ug/L		04/23/19 18:41	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		04/23/19 18:41	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 18:41	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		04/23/19 18:41	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 18:41	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		04/23/19 18:41	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 18:41	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		04/23/19 18:41	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		04/23/19 18:41	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		04/23/19 18:41	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 18:41	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 18:41	1
Chloromethane	1.0	U J1 Q	1.0	1.0	0.40	ug/L		04/23/19 18:41	1
cis-1,2-Dichloroethene	**0.91**	**J**	1.0	1.0	0.41	ug/L		04/23/19 18:41	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		04/23/19 18:41	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		04/23/19 18:41	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		04/23/19 18:41	1
Dichlorodifluoromethane	1.0	U Q	1.0	1.0	0.60	ug/L		04/23/19 18:41	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 18:41	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		04/23/19 18:41	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 18:41	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		04/23/19 18:41	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		04/23/19 18:41	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 18:41	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		04/23/19 18:41	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 18:41	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		04/23/19 18:41	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		04/23/19 18:41	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		04/23/19 18:41	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		04/23/19 18:41	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		04/23/19 18:41	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		04/23/19 18:41	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		04/23/19 18:41	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 18:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 18:41	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		04/23/19 18:41	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 18:41	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		04/23/19 18:41	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		04/23/19 18:41	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 18:41	1

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 32

Job ID: 680-167491-2

Client Sample ID: 32M-01-17XBR_SPR19

Lab Sample ID: 680-167491-7

Date Collected: 04/09/19 08:35
Matrix: Water
Date Received: 04/12/19 10:27

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		04/23/19 18:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*81 - 118*		*04/23/19 18:41*	*1*
4-Bromofluorobenzene (Surr)	*104*		*85 - 114*		*04/23/19 18:41*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 119*		*04/23/19 18:41*	*1*
Toluene-d8 (Surr)	*95*		*89 - 112*		*04/23/19 18:41*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**3.0**	**J**	10	3.0	1.0	ug/L		04/19/19 14:19	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/18/19 14:49	1

Client Sample ID: 32M-01-13XBR_SPR19

Lab Sample ID: 680-167491-8

Date Collected: 04/09/19 08:45
Matrix: Water
Date Received: 04/12/19 10:27

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U H	1.0	1.0	0.37	ug/L		04/24/19 00:53	1
1,1,1-Trichloroethane	1.0	U H	1.0	1.0	0.37	ug/L		04/24/19 00:53	1
1,1,2,2-Tetrachloroethane	1.0	U H	1.0	1.0	0.62	ug/L		04/24/19 00:53	1
1,1,2-Trichloroethane	0.50	U H	1.0	0.50	0.33	ug/L		04/24/19 00:53	1
1,1-Dichloroethane	1.0	U H	1.0	1.0	0.38	ug/L		04/24/19 00:53	1
1,1-Dichloroethene	1.0	U H	1.0	1.0	0.36	ug/L		04/24/19 00:53	1
1,1-Dichloropropene	1.0	U H	1.0	1.0	0.34	ug/L		04/24/19 00:53	1
1,2,3-Trichlorobenzene	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 00:53	1
1,2,3-Trichloropropane	1.0	U H	1.0	1.0	0.39	ug/L		04/24/19 00:53	1
1,2,4-Trichlorobenzene	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 00:53	1
1,2,4-Trimethylbenzene	1.0	U H	1.0	1.0	0.47	ug/L		04/24/19 00:53	1
1,2-Dibromo-3-Chloropropane	2.0	U H	5.0	2.0	1.1	ug/L		04/24/19 00:53	1
1,2-Dichlorobenzene	1.0	U H	1.0	1.0	0.37	ug/L		04/24/19 00:53	1
1,2-Dichloroethane	1.0	U H	1.0	1.0	0.50	ug/L		04/24/19 00:53	1
1,2-Dichloroethene, Total	1.0	U H	2.0	1.0	0.74	ug/L		04/24/19 00:53	1
1,2-Dichloropropane	1.0	U H	1.0	1.0	0.67	ug/L		04/24/19 00:53	1
1,3,5-Trimethylbenzene	0.50	U H	1.0	0.50	0.31	ug/L		04/24/19 00:53	1
1,3-Dichlorobenzene	1.0	U H	1.0	1.0	0.43	ug/L		04/24/19 00:53	1
1,3-Dichloropropane	1.0	U H Q	1.0	1.0	0.34	ug/L		04/24/19 00:53	1
1,4-Dichlorobenzene	1.0	U H	1.0	1.0	0.46	ug/L		04/24/19 00:53	1
2,2-Dichloropropane	1.0	U H	1.0	1.0	0.37	ug/L		04/24/19 00:53	1
2-Butanone (MEK)	10	U H	10	10	3.4	ug/L		04/24/19 00:53	1
2-Chlorotoluene	0.50	U H	1.0	0.50	0.27	ug/L		04/24/19 00:53	1
2-Hexanone	5.0	U H	10	5.0	2.0	ug/L		04/24/19 00:53	1
4-Chlorotoluene	1.0	U H	1.0	1.0	0.45	ug/L		04/24/19 00:53	1
4-Isopropyltoluene	1.0	U H	1.0	1.0	0.48	ug/L		04/24/19 00:53	1
4-Methyl-2-pentanone (MIBK)	5.0	U H	10	5.0	2.1	ug/L		04/24/19 00:53	1
Acetone	10	U H	10	10	7.0	ug/L		04/24/19 00:53	1
Benzene	1.0	U H	1.0	1.0	0.43	ug/L		04/24/19 00:53	1

Client Sample ID: 32M-01-13XBR_SPR19
Date Collected: 04/09/19 08:45
Date Received: 04/12/19 10:27

Lab Sample ID: 680-167491-8
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Bromobenzene	1.0	U H	1.0	1.0	0.50	ug/L		04/24/19 00:53	1
Bromoform	1.0	U H	1.0	1.0	0.43	ug/L		04/24/19 00:53	1
Bromomethane	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 00:53	1
Carbon disulfide	2.0	U H	2.0	2.0	0.43	ug/L		04/24/19 00:53	1
Carbon tetrachloride	0.50	U H	1.0	0.50	0.33	ug/L		04/24/19 00:53	1
Chlorobenzene	0.50	U H	1.0	0.50	0.26	ug/L		04/24/19 00:53	1
Chlorobromomethane	1.0	U H Q	1.0	1.0	0.45	ug/L		04/24/19 00:53	1
Chlorodibromomethane	0.50	U H	1.0	0.50	0.32	ug/L		04/24/19 00:53	1
Chloroethane	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 00:53	1
Chloroform	1.0	U H	1.0	1.0	0.50	ug/L		04/24/19 00:53	1
Chloromethane	1.0	U H	1.0	1.0	0.40	ug/L		04/24/19 00:53	1
cis-1,2-Dichloroethene	1.0	U H	1.0	1.0	0.41	ug/L		04/24/19 00:53	1
cis-1,3-Dichloropropene	1.0	U H	1.0	1.0	0.40	ug/L		04/24/19 00:53	1
Dibromomethane	1.0	U H Q	1.0	1.0	0.35	ug/L		04/24/19 00:53	1
Dichlorobromomethane	1.0	U H	1.0	1.0	0.44	ug/L		04/24/19 00:53	1
Dichlorodifluoromethane	1.0	U H Q	1.0	1.0	0.60	ug/L		04/24/19 00:53	1
Ethylbenzene	0.50	U H	1.0	0.50	0.33	ug/L		04/24/19 00:53	1
Ethylene Dibromide	1.0	U H	1.0	1.0	0.44	ug/L		04/24/19 00:53	1
Hexachlorobutadiene	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 00:53	1
Isopropylbenzene	1.0	U H	1.0	1.0	0.35	ug/L		04/24/19 00:53	1
Methyl tert-butyl ether	0.50	U H	10	0.50	0.30	ug/L		04/24/19 00:53	1
Methylene Chloride	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 00:53	1
m-Xylene & p-Xylene	1.0	U H	1.0	1.0	0.35	ug/L		04/24/19 00:53	1
Naphthalene	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 00:53	1
n-Butylbenzene	1.0	U H	1.0	1.0	0.47	ug/L		04/24/19 00:53	1
N-Propylbenzene	1.0	U H	1.0	1.0	0.38	ug/L		04/24/19 00:53	1
o-Xylene	0.50	U H	1.0	0.50	0.23	ug/L		04/24/19 00:53	1
sec-Butylbenzene	1.0	U H	1.0	1.0	0.42	ug/L		04/24/19 00:53	1
Styrene	0.50	U H	1.0	0.50	0.27	ug/L		04/24/19 00:53	1
tert-Butylbenzene	1.0	U H	1.0	1.0	0.45	ug/L		04/24/19 00:53	1
Tetrachloroethene	1.0	U H	1.0	1.0	0.74	ug/L		04/24/19 00:53	1
Toluene	1.0	U H	1.0	1.0	0.48	ug/L		04/24/19 00:53	1
trans-1,2-Dichloroethene	1.0	U H	1.0	1.0	0.37	ug/L		04/24/19 00:53	1
trans-1,3-Dichloropropene	1.0	U H	1.0	1.0	0.42	ug/L		04/24/19 00:53	1
Trichloroethene	1.0	U H	1.0	1.0	0.48	ug/L		04/24/19 00:53	1
Trichlorofluoromethane	1.0	U H Q	1.0	1.0	0.42	ug/L		04/24/19 00:53	1
Vinyl acetate	2.0	U H	2.0	2.0	0.81	ug/L		04/24/19 00:53	1
Vinyl chloride	1.0	U H	1.0	1.0	0.50	ug/L		04/24/19 00:53	1
Xylenes, Total	0.50	U H	2.0	0.50	0.23	ug/L		04/24/19 00:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*81 - 118*		*04/24/19 00:53*	*1*
4-Bromofluorobenzene (Surr)	*90*		*85 - 114*		*04/24/19 00:53*	*1*
Dibromofluoromethane (Surr)	*93*		*80 - 119*		*04/24/19 00:53*	*1*
Toluene-d8 (Surr)	*112*		*89 - 112*		*04/24/19 00:53*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**50**		10	3.0	1.0	ug/L		04/19/19 15:24	1

Client Sample ID: 32M-01-13XBR_SPR19

Lab Sample ID: 680-167491-8

Date Collected: 04/09/19 08:45

Matrix: Water

Date Received: 04/12/19 10:27

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/18/19 15:44	1

Client Sample ID: 32M-01-18XBR_SPR19

Lab Sample ID: 680-167491-9

Date Collected: 04/09/19 10:10

Matrix: Water

Date Received: 04/12/19 10:27

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	2.0	U H	2.0	2.0	0.74	ug/L		04/27/19 08:12	2
1,1,1-Trichloroethane	2.0	U H	2.0	2.0	0.74	ug/L		04/27/19 08:12	2
1,1,2,2-Tetrachloroethane	2.0	U H	2.0	2.0	1.2	ug/L		04/27/19 08:12	2
1,1,2-Trichloroethane	1.0	U H	2.0	1.0	0.66	ug/L		04/27/19 08:12	2
1,1-Dichloroethane	2.0	U H	2.0	2.0	0.76	ug/L		04/27/19 08:12	2
1,1-Dichloroethene	2.0	U H	2.0	2.0	0.72	ug/L		04/27/19 08:12	2
1,1-Dichloropropene	2.0	U H	2.0	2.0	0.68	ug/L		04/27/19 08:12	2
1,2,3-Trichlorobenzene	10	U H	10	10	5.0	ug/L		04/27/19 08:12	2
1,2,3-Trichloropropane	2.0	U H	2.0	2.0	0.78	ug/L		04/27/19 08:12	2
1,2,4-Trichlorobenzene	10	U H M	10	10	5.0	ug/L		04/27/19 08:12	2
1,2,4-Trimethylbenzene	2.0	U H	2.0	2.0	0.94	ug/L		04/27/19 08:12	2
1,2-Dibromo-3-Chloropropane	4.0	U H	10	4.0	2.2	ug/L		04/27/19 08:12	2
1,2-Dichlorobenzene	**250**	**H D**	2.0	2.0	0.74	ug/L		04/27/19 08:12	2
1,2-Dichloroethane	2.0	U H M	2.0	2.0	1.0	ug/L		04/27/19 08:12	2
1,2-Dichloroethene, Total	2.0	U H	4.0	2.0	1.5	ug/L		04/27/19 08:12	2
1,2-Dichloropropane	2.0	U H	2.0	2.0	1.3	ug/L		04/27/19 08:12	2
1,3,5-Trimethylbenzene	1.0	U H	2.0	1.0	0.62	ug/L		04/27/19 08:12	2
1,3-Dichlorobenzene	**41**	**H D**	2.0	2.0	0.86	ug/L		04/27/19 08:12	2
1,3-Dichloropropane	2.0	U H	2.0	2.0	0.68	ug/L		04/27/19 08:12	2
1,4-Dichlorobenzene	**29**	**H D**	2.0	2.0	0.92	ug/L		04/27/19 08:12	2
2,2-Dichloropropane	2.0	U H	2.0	2.0	0.74	ug/L		04/27/19 08:12	2
2-Butanone (MEK)	20	U H	20	20	6.8	ug/L		04/27/19 08:12	2
2-Chlorotoluene	1.0	U H	2.0	1.0	0.54	ug/L		04/27/19 08:12	2
2-Hexanone	10	U H	20	10	4.0	ug/L		04/27/19 08:12	2
4-Chlorotoluene	2.0	U H	2.0	2.0	0.90	ug/L		04/27/19 08:12	2
4-Isopropyltoluene	2.0	U H	2.0	2.0	0.96	ug/L		04/27/19 08:12	2
4-Methyl-2-pentanone (MIBK)	10	U H	20	10	4.2	ug/L		04/27/19 08:12	2
Acetone	20	U H	20	20	14	ug/L		04/27/19 08:12	2
Benzene	2.0	U H M	2.0	2.0	0.86	ug/L		04/27/19 08:12	2
Bromobenzene	2.0	U H	2.0	2.0	1.0	ug/L		04/27/19 08:12	2
Bromoform	2.0	U H	2.0	2.0	0.86	ug/L		04/27/19 08:12	2
Bromomethane	10	U H	10	10	5.0	ug/L		04/27/19 08:12	2
Carbon disulfide	4.0	U H	4.0	4.0	0.86	ug/L		04/27/19 08:12	2
Carbon tetrachloride	1.0	U H	2.0	1.0	0.66	ug/L		04/27/19 08:12	2
Chlorobenzene	**180**	**H D**	2.0	1.0	0.52	ug/L		04/27/19 08:12	2
Chlorobromomethane	2.0	U H	2.0	2.0	0.90	ug/L		04/27/19 08:12	2
Chlorodibromomethane	1.0	U H	2.0	1.0	0.64	ug/L		04/27/19 08:12	2
Chloroethane	10	U H	10	10	5.0	ug/L		04/27/19 08:12	2
Chloroform	2.0	U H	2.0	2.0	1.0	ug/L		04/27/19 08:12	2
Chloromethane	2.0	U Q H	2.0	2.0	0.80	ug/L		04/27/19 08:12	2
cis-1,2-Dichloroethene	2.0	U H	2.0	2.0	0.82	ug/L		04/27/19 08:12	2
cis-1,3-Dichloropropene	2.0	U H	2.0	2.0	0.80	ug/L		04/27/19 08:12	2

Client Sample ID: 32M-01-18XBR_SPR19

Lab Sample ID: 680-167491-9

Date Collected: 04/09/19 10:10

Matrix: Water

Date Received: 04/12/19 10:27

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Dibromomethane	2.0	U H	2.0	2.0	0.70	ug/L		04/27/19 08:12	2
Dichlorobromomethane	2.0	U H	2.0	2.0	0.88	ug/L		04/27/19 08:12	2
Dichlorodifluoromethane	2.0	U H	2.0	2.0	1.2	ug/L		04/27/19 08:12	2
Ethylbenzene	1.0	U H M	2.0	1.0	0.66	ug/L		04/27/19 08:12	2
Ethylene Dibromide	2.0	U H	2.0	2.0	0.88	ug/L		04/27/19 08:12	2
Hexachlorobutadiene	10	U H	10	10	5.0	ug/L		04/27/19 08:12	2
Isopropylbenzene	2.0	U H M	2.0	2.0	0.70	ug/L		04/27/19 08:12	2
Methyl tert-butyl ether	1.0	U H	20	1.0	0.60	ug/L		04/27/19 08:12	2
Methylene Chloride	10	U H	10	10	5.0	ug/L		04/27/19 08:12	2
m-Xylene & p-Xylene	2.0	U H	2.0	2.0	0.70	ug/L		04/27/19 08:12	2
Naphthalene	10	U H	10	10	5.0	ug/L		04/27/19 08:12	2
n-Butylbenzene	2.0	U H M	2.0	2.0	0.94	ug/L		04/27/19 08:12	2
N-Propylbenzene	2.0	U H M	2.0	2.0	0.76	ug/L		04/27/19 08:12	2
o-Xylene	1.0	U H	2.0	1.0	0.46	ug/L		04/27/19 08:12	2
sec-Butylbenzene	2.0	U H M	2.0	2.0	0.84	ug/L		04/27/19 08:12	2
Styrene	1.0	U H	2.0	1.0	0.54	ug/L		04/27/19 08:12	2
tert-Butylbenzene	2.0	U H	2.0	2.0	0.90	ug/L		04/27/19 08:12	2
Tetrachloroethene	2.0	U H	2.0	2.0	1.5	ug/L		04/27/19 08:12	2
Toluene	2.0	U H	2.0	2.0	0.96	ug/L		04/27/19 08:12	2
trans-1,2-Dichloroethene	2.0	U H	2.0	2.0	0.74	ug/L		04/27/19 08:12	2
trans-1,3-Dichloropropene	2.0	U H	2.0	2.0	0.84	ug/L		04/27/19 08:12	2
Trichloroethene	2.0	U H M	2.0	2.0	0.96	ug/L		04/27/19 08:12	2
Trichlorofluoromethane	2.0	U H	2.0	2.0	0.84	ug/L		04/27/19 08:12	2
Vinyl acetate	4.0	U H	4.0	4.0	1.6	ug/L		04/27/19 08:12	2
Vinyl chloride	2.0	U H	2.0	2.0	1.0	ug/L		04/27/19 08:12	2
Xylenes, Total	1.0	U H	4.0	1.0	0.46	ug/L		04/27/19 08:12	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*81 - 118*		*04/27/19 08:12*	*2*
4-Bromofluorobenzene (Surr)	*92*		*85 - 114*		*04/27/19 08:12*	*2*
Dibromofluoromethane (Surr)	*113*		*80 - 119*		*04/27/19 08:12*	*2*
Toluene-d8 (Surr)	*97*		*89 - 112*		*04/27/19 08:12*	*2*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**2200**		10	3.0	1.0	ug/L		04/19/19 15:09	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**3.4**		3.0	3.0	1.5	ug/L		04/18/19 15:36	1

Client Sample ID: 32M-DUP01_SPR19

Lab Sample ID: 680-167491-10

Date Collected: 04/09/19 10:15

Matrix: Water

Date Received: 04/12/19 10:27

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	20	U	20	20	7.4	ug/L		04/23/19 18:16	20
1,1,1-Trichloroethane	20	U	20	20	7.4	ug/L		04/23/19 18:16	20
1,1,2,2-Tetrachloroethane	20	U	20	20	12	ug/L		04/23/19 18:16	20
1,1,2-Trichloroethane	10	U	20	10	6.6	ug/L		04/23/19 18:16	20

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 32

Job ID: 680-167491-2

Client Sample ID: 32M-DUP01_SPR19
Date Collected: 04/09/19 10:15
Date Received: 04/12/19 10:27

Lab Sample ID: 680-167491-10
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethane	20	U	20	20	7.6	ug/L		04/23/19 18:16	20
1,1-Dichloroethene	20	U	20	20	7.2	ug/L		04/23/19 18:16	20
1,1-Dichloropropene	20	U	20	20	6.8	ug/L		04/23/19 18:16	20
1,2,3-Trichlorobenzene	100	U	100	100	50	ug/L		04/23/19 18:16	20
1,2,3-Trichloropropane	20	U	20	20	7.8	ug/L		04/23/19 18:16	20
1,2,4-Trichlorobenzene	100	U	100	100	50	ug/L		04/23/19 18:16	20
1,2,4-Trimethylbenzene	20	U	20	20	9.4	ug/L		04/23/19 18:16	20
1,2-Dibromo-3-Chloropropane	40	U	100	40	22	ug/L		04/23/19 18:16	20
1,2-Dichlorobenzene	**260**	**D**	20	20	7.4	ug/L		04/23/19 18:16	20
1,2-Dichloroethane	20	U	20	20	10	ug/L		04/23/19 18:16	20
1,2-Dichloroethene, Total	**26**	**J D**	40	20	15	ug/L		04/23/19 18:16	20
1,2-Dichloropropane	20	U	20	20	13	ug/L		04/23/19 18:16	20
1,3,5-Trimethylbenzene	10	U	20	10	6.2	ug/L		04/23/19 18:16	20
1,3-Dichlorobenzene	**42**	**D**	20	20	8.6	ug/L		04/23/19 18:16	20
1,3-Dichloropropane	20	U	20	20	6.8	ug/L		04/23/19 18:16	20
1,4-Dichlorobenzene	**31**	**D**	20	20	9.2	ug/L		04/23/19 18:16	20
2,2-Dichloropropane	20	U	20	20	7.4	ug/L		04/23/19 18:16	20
2-Butanone (MEK)	200	U	200	200	68	ug/L		04/23/19 18:16	20
2-Chlorotoluene	10	U	20	10	5.4	ug/L		04/23/19 18:16	20
2-Hexanone	100	U	200	100	40	ug/L		04/23/19 18:16	20
4-Chlorotoluene	20	U	20	20	9.0	ug/L		04/23/19 18:16	20
4-Isopropyltoluene	20	U	20	20	9.6	ug/L		04/23/19 18:16	20
4-Methyl-2-pentanone (MIBK)	100	U	200	100	42	ug/L		04/23/19 18:16	20
Acetone	200	U	200	200	140	ug/L		04/23/19 18:16	20
Benzene	20	U	20	20	8.6	ug/L		04/23/19 18:16	20
Bromobenzene	20	U	20	20	10	ug/L		04/23/19 18:16	20
Bromoform	20	U	20	20	8.6	ug/L		04/23/19 18:16	20
Bromomethane	100	U	100	100	50	ug/L		04/23/19 18:16	20
Carbon disulfide	40	U	40	40	8.6	ug/L		04/23/19 18:16	20
Carbon tetrachloride	10	U	20	10	6.6	ug/L		04/23/19 18:16	20
Chlorobenzene	**170**	**D**	20	10	5.2	ug/L		04/23/19 18:16	20
Chlorobromomethane	20	U	20	20	9.0	ug/L		04/23/19 18:16	20
Chlorodibromomethane	10	U	20	10	6.4	ug/L		04/23/19 18:16	20
Chloroethane	100	U	100	100	50	ug/L		04/23/19 18:16	20
Chloroform	20	U	20	20	10	ug/L		04/23/19 18:16	20
Chloromethane	20	U M Q	20	20	8.0	ug/L		04/23/19 18:16	20
cis-1,2-Dichloroethene	**26**	**D**	20	20	8.2	ug/L		04/23/19 18:16	20
cis-1,3-Dichloropropene	20	U	20	20	8.0	ug/L		04/23/19 18:16	20
Dibromomethane	20	U	20	20	7.0	ug/L		04/23/19 18:16	20
Dichlorobromomethane	20	U	20	20	8.8	ug/L		04/23/19 18:16	20
Dichlorodifluoromethane	20	U Q	20	20	12	ug/L		04/23/19 18:16	20
Ethylbenzene	10	U	20	10	6.6	ug/L		04/23/19 18:16	20
Ethylene Dibromide	20	U	20	20	8.8	ug/L		04/23/19 18:16	20
Hexachlorobutadiene	100	U	100	100	50	ug/L		04/23/19 18:16	20
Isopropylbenzene	20	U	20	20	7.0	ug/L		04/23/19 18:16	20
Methyl tert-butyl ether	10	U	200	10	6.0	ug/L		04/23/19 18:16	20
Methylene Chloride	100	U	100	100	50	ug/L		04/23/19 18:16	20
m-Xylene & p-Xylene	20	U	20	20	7.0	ug/L		04/23/19 18:16	20
Naphthalene	100	U	100	100	50	ug/L		04/23/19 18:16	20

Client Sample ID: 32M-DUP01_SPR19

Lab Sample ID: 680-167491-10

Date Collected: 04/09/19 10:15

Matrix: Water

Date Received: 04/12/19 10:27

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
n-Butylbenzene	20	U	20	20	9.4	ug/L		04/23/19 18:16	20
N-Propylbenzene	20	U	20	20	7.6	ug/L		04/23/19 18:16	20
o-Xylene	10	U	20	10	4.6	ug/L		04/23/19 18:16	20
sec-Butylbenzene	20	U	20	20	8.4	ug/L		04/23/19 18:16	20
Styrene	10	U	20	10	5.4	ug/L		04/23/19 18:16	20
tert-Butylbenzene	20	U	20	20	9.0	ug/L		04/23/19 18:16	20
Tetrachloroethene	20	U	20	20	15	ug/L		04/23/19 18:16	20
Toluene	20	U	20	20	9.6	ug/L		04/23/19 18:16	20
trans-1,2-Dichloroethene	20	U	20	20	7.4	ug/L		04/23/19 18:16	20
trans-1,3-Dichloropropene	20	U	20	20	8.4	ug/L		04/23/19 18:16	20
Trichloroethene	20	U	20	20	9.6	ug/L		04/23/19 18:16	20
Trichlorofluoromethane	20	U	20	20	8.4	ug/L		04/23/19 18:16	20
Vinyl acetate	40	U	40	40	16	ug/L		04/23/19 18:16	20
Vinyl chloride	20	U	20	20	10	ug/L		04/23/19 18:16	20
Xylenes, Total	10	U	40	10	4.6	ug/L		04/23/19 18:16	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*81 - 118*		*04/23/19 18:16*	*20*
4-Bromofluorobenzene (Surr)	*104*		*85 - 114*		*04/23/19 18:16*	*20*
Dibromofluoromethane (Surr)	*103*		*80 - 119*		*04/23/19 18:16*	*20*
Toluene-d8 (Surr)	*96*		*89 - 112*		*04/23/19 18:16*	*20*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**3100**		10	3.0	1.0	ug/L		04/19/19 15:29	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**3.6**		3.0	3.0	1.5	ug/L		04/18/19 15:56	1

Client Sample ID: 32M-01-14XOB_SPR19

Lab Sample ID: 680-167491-11

Date Collected: 04/09/19 09:30

Matrix: Water

Date Received: 04/12/19 10:27

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U H	1.0	1.0	0.37	ug/L		04/24/19 01:14	1
1,1,1-Trichloroethane	1.0	U H	1.0	1.0	0.37	ug/L		04/24/19 01:14	1
1,1,2,2-Tetrachloroethane	1.0	U H	1.0	1.0	0.62	ug/L		04/24/19 01:14	1
1,1,2-Trichloroethane	0.50	U H	1.0	0.50	0.33	ug/L		04/24/19 01:14	1
1,1-Dichloroethane	1.0	U H	1.0	1.0	0.38	ug/L		04/24/19 01:14	1
1,1-Dichloroethene	1.0	U H	1.0	1.0	0.36	ug/L		04/24/19 01:14	1
1,1-Dichloropropene	1.0	U H	1.0	1.0	0.34	ug/L		04/24/19 01:14	1
1,2,3-Trichlorobenzene	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 01:14	1
1,2,3-Trichloropropane	1.0	U H	1.0	1.0	0.39	ug/L		04/24/19 01:14	1
1,2,4-Trichlorobenzene	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 01:14	1
1,2,4-Trimethylbenzene	1.0	U H	1.0	1.0	0.47	ug/L		04/24/19 01:14	1
1,2-Dibromo-3-Chloropropane	2.0	U H	5.0	2.0	1.1	ug/L		04/24/19 01:14	1
1,2-Dichlorobenzene	1.0	U H	1.0	1.0	0.37	ug/L		04/24/19 01:14	1
1,2-Dichloroethane	1.0	U H	1.0	1.0	0.50	ug/L		04/24/19 01:14	1
1,2-Dichloroethene, Total	1.0	U H	2.0	1.0	0.74	ug/L		04/24/19 01:14	1

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 32

Job ID: 680-167491-2

Client Sample ID: 32M-01-14XOB_SPR19
Date Collected: 04/09/19 09:30
Date Received: 04/12/19 10:27

Lab Sample ID: 680-167491-11
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,2-Dichloropropane	1.0	U H	1.0	1.0	0.67	ug/L		04/24/19 01:14	1
1,3,5-Trimethylbenzene	0.50	U H	1.0	0.50	0.31	ug/L		04/24/19 01:14	1
1,3-Dichlorobenzene	1.0	U H	1.0	1.0	0.43	ug/L		04/24/19 01:14	1
1,3-Dichloropropane	1.0	U H Q	1.0	1.0	0.34	ug/L		04/24/19 01:14	1
1,4-Dichlorobenzene	1.0	U H	1.0	1.0	0.46	ug/L		04/24/19 01:14	1
2,2-Dichloropropane	1.0	U H	1.0	1.0	0.37	ug/L		04/24/19 01:14	1
2-Butanone (MEK)	10	U H	10	10	3.4	ug/L		04/24/19 01:14	1
2-Chlorotoluene	0.50	U H	1.0	0.50	0.27	ug/L		04/24/19 01:14	1
2-Hexanone	5.0	U H	10	5.0	2.0	ug/L		04/24/19 01:14	1
4-Chlorotoluene	1.0	U H	1.0	1.0	0.45	ug/L		04/24/19 01:14	1
4-Isopropyltoluene	1.0	U H	1.0	1.0	0.48	ug/L		04/24/19 01:14	1
4-Methyl-2-pentanone (MIBK)	5.0	U H	10	5.0	2.1	ug/L		04/24/19 01:14	1
Acetone	10	U H	10	10	7.0	ug/L		04/24/19 01:14	1
Benzene	1.0	U H	1.0	1.0	0.43	ug/L		04/24/19 01:14	1
Bromobenzene	1.0	U H	1.0	1.0	0.50	ug/L		04/24/19 01:14	1
Bromoform	1.0	U H	1.0	1.0	0.43	ug/L		04/24/19 01:14	1
Bromomethane	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 01:14	1
Carbon disulfide	2.0	U H	2.0	2.0	0.43	ug/L		04/24/19 01:14	1
Carbon tetrachloride	0.50	U H	1.0	0.50	0.33	ug/L		04/24/19 01:14	1
Chlorobenzene	0.50	U H	1.0	0.50	0.26	ug/L		04/24/19 01:14	1
Chlorobromomethane	1.0	U H Q	1.0	1.0	0.45	ug/L		04/24/19 01:14	1
Chlorodibromomethane	0.50	U H	1.0	0.50	0.32	ug/L		04/24/19 01:14	1
Chloroethane	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 01:14	1
Chloroform	1.0	U H	1.0	1.0	0.50	ug/L		04/24/19 01:14	1
Chloromethane	1.0	U H	1.0	1.0	0.40	ug/L		04/24/19 01:14	1
cis-1,2-Dichloroethene	1.0	U H	1.0	1.0	0.41	ug/L		04/24/19 01:14	1
cis-1,3-Dichloropropene	1.0	U H	1.0	1.0	0.40	ug/L		04/24/19 01:14	1
Dibromomethane	1.0	U H Q	1.0	1.0	0.35	ug/L		04/24/19 01:14	1
Dichlorobromomethane	1.0	U H	1.0	1.0	0.44	ug/L		04/24/19 01:14	1
Dichlorodifluoromethane	1.0	U H Q	1.0	1.0	0.60	ug/L		04/24/19 01:14	1
Ethylbenzene	0.50	U H	1.0	0.50	0.33	ug/L		04/24/19 01:14	1
Ethylene Dibromide	1.0	U H	1.0	1.0	0.44	ug/L		04/24/19 01:14	1
Hexachlorobutadiene	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 01:14	1
Isopropylbenzene	1.0	U H	1.0	1.0	0.35	ug/L		04/24/19 01:14	1
Methyl tert-butyl ether	0.50	U H	10	0.50	0.30	ug/L		04/24/19 01:14	1
Methylene Chloride	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 01:14	1
m-Xylene & p-Xylene	1.0	U H	1.0	1.0	0.35	ug/L		04/24/19 01:14	1
Naphthalene	5.0	U H	5.0	5.0	2.5	ug/L		04/24/19 01:14	1
n-Butylbenzene	1.0	U H	1.0	1.0	0.47	ug/L		04/24/19 01:14	1
N-Propylbenzene	1.0	U H	1.0	1.0	0.38	ug/L		04/24/19 01:14	1
o-Xylene	0.50	U H	1.0	0.50	0.23	ug/L		04/24/19 01:14	1
sec-Butylbenzene	1.0	U H	1.0	1.0	0.42	ug/L		04/24/19 01:14	1
Styrene	0.50	U H	1.0	0.50	0.27	ug/L		04/24/19 01:14	1
tert-Butylbenzene	1.0	U H	1.0	1.0	0.45	ug/L		04/24/19 01:14	1
Tetrachloroethene	1.0	U H	1.0	1.0	0.74	ug/L		04/24/19 01:14	1
Toluene	1.0	U H	1.0	1.0	0.48	ug/L		04/24/19 01:14	1
trans-1,2-Dichloroethene	1.0	U H	1.0	1.0	0.37	ug/L		04/24/19 01:14	1
trans-1,3-Dichloropropene	1.0	U H	1.0	1.0	0.42	ug/L		04/24/19 01:14	1
Trichloroethene	1.0	U H	1.0	1.0	0.48	ug/L		04/24/19 01:14	1

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 32

Job ID: 680-167491-2

Client Sample ID: 32M-01-14XOB_SPR19
Date Collected: 04/09/19 09:30
Date Received: 04/12/19 10:27

Lab Sample ID: 680-167491-11
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Trichlorofluoromethane	1.0	U H Q	1.0	1.0	0.42	ug/L		04/24/19 01:14	1
Vinyl acetate	2.0	U H	2.0	2.0	0.81	ug/L		04/24/19 01:14	1
Vinyl chloride	1.0	U H	1.0	1.0	0.50	ug/L		04/24/19 01:14	1
Xylenes, Total	0.50	U H	2.0	0.50	0.23	ug/L		04/24/19 01:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*81 - 118*		*04/24/19 01:14*	*1*
4-Bromofluorobenzene (Surr)	*107*		*85 - 114*		*04/24/19 01:14*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 119*		*04/24/19 01:14*	*1*
Toluene-d8 (Surr)	*90*		*89 - 112*		*04/24/19 01:14*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	**2200**		10	3.0	1.0	ug/L		04/19/19 15:13	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**29**		3.0	3.0	1.5	ug/L		04/18/19 15:40	1

Surrogate Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 32

Job ID: 680-167491-2

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(81-118)	(85-114)	(80-119)	(89-112)
680-167491-2	32M-TRIP BLANK	74 Q	92	81	70 Q
680-167491-7	32M-01-17XBR_SPR19	94	104	96	95
680-167491-7 MS	32M-01-17XBR_SPR19	91	98	94	94
680-167491-7 MSD	32M-01-17XBR_SPR19	92	103	94	96
680-167491-8	32M-01-13XBR_SPR19	85	90	93	112
680-167491-9	32M-01-18XBR_SPR19	117	92	113	97
680-167491-10	32M-DUP01_SPR19	106	104	103	96
680-167491-11	32M-01-14XOB_SPR19	89	107	97	90
LCS 680-567432/3	Lab Control Sample	97	101	99	96
LCS 680-567541/1005	Lab Control Sample	89	101	95	95
LCS 680-568059/5	Lab Control Sample	100	101	102	98
LCSD 680-567432/4	Lab Control Sample Dup	92	96	97	93
LCSD 680-567541/6	Lab Control Sample Dup	79 Q	90	81	84 Q
LCSD 680-568059/6	Lab Control Sample Dup	99	97	104	93
MB 680-567432/8	Method Blank	97	98	98	92
MB 680-567541/10	Method Blank	96	90	98	87 Q
MB 680-568059/10	Method Blank	94	97	98	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

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

Lab Sample ID: MB 680-567432/8
Matrix: Water
Analysis Batch: 567432

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 11:22	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 11:22	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		04/23/19 11:22	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 11:22	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		04/23/19 11:22	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		04/23/19 11:22	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		04/23/19 11:22	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 11:22	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		04/23/19 11:22	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 11:22	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		04/23/19 11:22	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		04/23/19 11:22	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 11:22	1
1,2-Dichloroethane	1.0	U M	1.0	1.0	0.50	ug/L		04/23/19 11:22	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		04/23/19 11:22	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		04/23/19 11:22	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		04/23/19 11:22	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		04/23/19 11:22	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		04/23/19 11:22	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		04/23/19 11:22	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 11:22	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		04/23/19 11:22	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		04/23/19 11:22	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		04/23/19 11:22	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		04/23/19 11:22	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 11:22	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		04/23/19 11:22	1
Acetone	10	U	10	10	7.0	ug/L		04/23/19 11:22	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		04/23/19 11:22	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 11:22	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		04/23/19 11:22	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 11:22	1
Carbon disulfide	0.638	J	2.0	2.0	0.43	ug/L		04/23/19 11:22	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 11:22	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		04/23/19 11:22	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		04/23/19 11:22	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		04/23/19 11:22	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 11:22	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 11:22	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		04/23/19 11:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		04/23/19 11:22	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		04/23/19 11:22	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		04/23/19 11:22	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		04/23/19 11:22	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		04/23/19 11:22	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 11:22	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		04/23/19 11:22	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 11:22	1

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

Lab Sample ID: MB 680-567432/8
Matrix: Water
Analysis Batch: 567432

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		04/23/19 11:22	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		04/23/19 11:22	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 11:22	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		04/23/19 11:22	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 11:22	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		04/23/19 11:22	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		04/23/19 11:22	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		04/23/19 11:22	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		04/23/19 11:22	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		04/23/19 11:22	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		04/23/19 11:22	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		04/23/19 11:22	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 11:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 11:22	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		04/23/19 11:22	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 11:22	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		04/23/19 11:22	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		04/23/19 11:22	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 11:22	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		04/23/19 11:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*81 - 118*		*04/23/19 11:22*	*1*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*04/23/19 11:22*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 119*		*04/23/19 11:22*	*1*
Toluene-d8 (Surr)	*92*		*89 - 112*		*04/23/19 11:22*	*1*

Lab Sample ID: LCS 680-567432/3
Matrix: Water
Analysis Batch: 567432

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	50.0	50.5		ug/L		101	78 - 124
1,1,1-Trichloroethane	50.0	45.3		ug/L		91	74 - 131
1,1,2,2-Tetrachloroethane	50.0	50.0		ug/L		100	71 - 121
1,1,2-Trichloroethane	50.0	50.6		ug/L		101	80 - 119
1,1-Dichloroethane	50.0	46.9		ug/L		94	77 - 125
1,1-Dichloroethene	50.0	39.8		ug/L		80	71 - 131
1,1-Dichloropropene	50.0	45.1		ug/L		90	79 - 125
1,2,3-Trichlorobenzene	50.0	50.6		ug/L		101	69 - 129
1,2,3-Trichloropropane	50.0	49.0		ug/L		98	73 - 122
1,2,4-Trichlorobenzene	50.0	51.0		ug/L		102	69 - 130
1,2,4-Trimethylbenzene	50.0	49.9		ug/L		100	76 - 124
1,2-Dibromo-3-Chloropropane	50.0	47.0		ug/L		94	62 - 128
1,2-Dichlorobenzene	50.0	48.7		ug/L		97	80 - 119
1,2-Dichloroethane	50.0	50.6		ug/L		101	73 - 128
1,2-Dichloroethene, Total	100	96.2		ug/L		96	79 - 121
1,2-Dichloropropane	50.0	48.8		ug/L		98	78 - 122

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

Lab Sample ID: LCS 680-567432/3
Matrix: Water
Analysis Batch: 567432

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3,5-Trimethylbenzene	50.0	48.0		ug/L		96	75 - 124
1,3-Dichlorobenzene	50.0	48.4		ug/L		97	80 - 119
1,3-Dichloropropane	50.0	49.8		ug/L		100	80 - 119
1,4-Dichlorobenzene	50.0	47.7		ug/L		95	79 - 118
2,2-Dichloropropane	50.0	47.5		ug/L		95	60 - 139
2-Butanone (MEK)	250	234		ug/L		94	56 - 143
2-Chlorotoluene	50.0	47.8		ug/L		96	79 - 122
2-Hexanone	250	251		ug/L		100	57 - 139
4-Chlorotoluene	50.0	48.4		ug/L		97	78 - 122
4-Isopropyltoluene	50.0	47.9		ug/L		96	77 - 127
4-Methyl-2-pentanone (MIBK)	250	257		ug/L		103	67 - 130
Acetone	250	221		ug/L		88	39 - 160
Benzene	50.0	46.2		ug/L		92	79 - 120
Bromobenzene	50.0	50.5		ug/L		101	80 - 120
Bromoform	50.0	50.1		ug/L		100	66 - 130
Bromomethane	50.0	47.3		ug/L		95	53 - 141
Carbon disulfide	50.0	44.1		ug/L		88	64 - 133
Carbon tetrachloride	50.0	44.2		ug/L		88	72 - 136
Chlorobenzene	50.0	49.6		ug/L		99	82 - 118
Chlorobromomethane	50.0	50.6		ug/L		101	78 - 123
Chlorodibromomethane	50.0	50.2		ug/L		100	74 - 126
Chloroethane	50.0	54.1		ug/L		108	60 - 138
Chloroform	50.0	47.8		ug/L		96	79 - 124
Chloromethane	50.0	57.9	M	ug/L		116	50 - 139
cis-1,2-Dichloroethene	50.0	47.6		ug/L		95	78 - 123
cis-1,3-Dichloropropene	50.0	50.4		ug/L		101	75 - 124
Dibromomethane	50.0	48.4		ug/L		97	79 - 123
Dichlorobromomethane	50.0	49.1		ug/L		98	79 - 125
Dichlorodifluoromethane	50.0	33.8	M	ug/L		68	32 - 152
Ethylbenzene	50.0	48.1		ug/L		96	79 - 121
Ethylene Dibromide	50.0	50.4		ug/L		101	75 - 127
Hexachlorobutadiene	50.0	52.0		ug/L		104	66 - 134
Isopropylbenzene	50.0	48.2		ug/L		96	72 - 131
Methyl tert-butyl ether	50.0	49.4		ug/L		99	71 - 124
Methylene Chloride	50.0	50.5		ug/L		101	74 - 124
m-Xylene & p-Xylene	50.0	47.4		ug/L		95	80 - 121
Naphthalene	50.0	50.4		ug/L		101	61 - 128
n-Butylbenzene	50.0	50.0		ug/L		100	75 - 128
N-Propylbenzene	50.0	48.3		ug/L		97	76 - 126
o-Xylene	50.0	48.8		ug/L		98	78 - 122
sec-Butylbenzene	50.0	47.3		ug/L		95	77 - 126
Styrene	50.0	48.5		ug/L		97	78 - 123
tert-Butylbenzene	50.0	47.4		ug/L		95	78 - 124
Tetrachloroethene	50.0	46.8		ug/L		94	74 - 129
Toluene	50.0	47.5		ug/L		95	80 - 121
trans-1,2-Dichloroethene	50.0	48.6		ug/L		97	75 - 124
trans-1,3-Dichloropropene	50.0	50.8		ug/L		102	73 - 127
Trichloroethene	50.0	46.0		ug/L		92	79 - 123
Trichlorofluoromethane	50.0	47.6	M	ug/L		95	65 - 141

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

Lab Sample ID: LCS 680-567432/3
Matrix: Water
Analysis Batch: 567432

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Vinyl acetate			100	113		ug/L		113	54 - 146		
Vinyl chloride			50.0	45.4		ug/L		91	58 - 137		
Xylenes, Total			100	96.2		ug/L		96	79 - 121		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*81 - 118*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*
Dibromofluoromethane (Surr)	*99*		*80 - 119*
Toluene-d8 (Surr)	*96*		*89 - 112*

Lab Sample ID: LCSD 680-567432/4
Matrix: Water
Analysis Batch: 567432

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane			50.0	47.8		ug/L		96	78 - 124	5	20
1,1,1-Trichloroethane			50.0	45.0		ug/L		90	74 - 131	1	20
1,1,2,2-Tetrachloroethane			50.0	45.7		ug/L		91	71 - 121	9	20
1,1,2-Trichloroethane			50.0	47.1		ug/L		94	80 - 119	7	20
1,1-Dichloroethane			50.0	44.7		ug/L		89	77 - 125	5	20
1,1-Dichloroethene			50.0	39.6		ug/L		79	71 - 131	1	20
1,1-Dichloropropene			50.0	45.5		ug/L		91	79 - 125	1	20
1,2,3-Trichlorobenzene			50.0	48.9		ug/L		98	69 - 129	3	20
1,2,3-Trichloropropane			50.0	46.0		ug/L		92	73 - 122	6	20
1,2,4-Trichlorobenzene			50.0	49.5		ug/L		99	69 - 130	3	20
1,2,4-Trimethylbenzene			50.0	47.3		ug/L		95	76 - 124	5	20
1,2-Dibromo-3-Chloropropane			50.0	44.5		ug/L		89	62 - 128	5	20
1,2-Dichlorobenzene			50.0	46.8		ug/L		94	80 - 119	4	20
1,2-Dichloroethane			50.0	48.0		ug/L		96	73 - 128	5	20
1,2-Dichloroethene, Total			100	91.5		ug/L		91	79 - 121	5	20
1,2-Dichloropropane			50.0	47.4		ug/L		95	78 - 122	3	20
1,3,5-Trimethylbenzene			50.0	46.7		ug/L		93	75 - 124	3	20
1,3-Dichlorobenzene			50.0	46.5		ug/L		93	80 - 119	4	20
1,3-Dichloropropane			50.0	47.8		ug/L		96	80 - 119	4	20
1,4-Dichlorobenzene			50.0	46.2		ug/L		92	79 - 118	3	20
2,2-Dichloropropane			50.0	45.6		ug/L		91	60 - 139	4	20
2-Butanone (MEK)			250	212		ug/L		85	56 - 143	10	20
2-Chlorotoluene			50.0	46.6		ug/L		93	79 - 122	3	20
2-Hexanone			250	226		ug/L		91	57 - 139	10	20
4-Chlorotoluene			50.0	46.1		ug/L		92	78 - 122	5	20
4-Isopropyltoluene			50.0	47.0		ug/L		94	77 - 127	2	20
4-Methyl-2-pentanone (MIBK)			250	235		ug/L		94	67 - 130	9	20
Acetone			250	186		ug/L		75	39 - 160	17	20
Benzene			50.0	45.1		ug/L		90	79 - 120	2	20
Bromobenzene			50.0	48.4		ug/L		97	80 - 120	4	20
Bromoform			50.0	46.6		ug/L		93	66 - 130	7	20
Bromomethane			50.0	45.1		ug/L		90	53 - 141	5	20
Carbon disulfide			50.0	43.9		ug/L		88	64 - 133	0	20

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

Lab Sample ID: LCSD 680-567432/4
Matrix: Water
Analysis Batch: 567432

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride	50.0	45.0		ug/L		90	72 - 136	2	20
Chlorobenzene	50.0	47.0		ug/L		94	82 - 118	5	20
Chlorobromomethane	50.0	47.1		ug/L		94	78 - 123	7	20
Chlorodibromomethane	50.0	47.9		ug/L		96	74 - 126	5	20
Chloroethane	50.0	51.4		ug/L		103	60 - 138	5	20
Chloroform	50.0	44.8		ug/L		90	79 - 124	7	20
Chloromethane	50.0	55.6	M	ug/L		111	50 - 139	4	20
cis-1,2-Dichloroethene	50.0	45.4		ug/L		91	78 - 123	5	20
cis-1,3-Dichloropropene	50.0	47.8		ug/L		96	75 - 124	5	20
Dibromomethane	50.0	46.3		ug/L		93	79 - 123	5	20
Dichlorobromomethane	50.0	47.0		ug/L		94	79 - 125	4	20
Dichlorodifluoromethane	50.0	33.7	M	ug/L		67	32 - 152	0	20
Ethylbenzene	50.0	46.0		ug/L		92	79 - 121	4	20
Ethylene Dibromide	50.0	47.6		ug/L		95	75 - 127	6	20
Hexachlorobutadiene	50.0	50.2		ug/L		100	66 - 134	3	20
Isopropylbenzene	50.0	46.6		ug/L		93	72 - 131	3	20
Methyl tert-butyl ether	50.0	44.9		ug/L		90	71 - 124	10	20
Methylene Chloride	50.0	47.1		ug/L		94	74 - 124	7	20
m-Xylene & p-Xylene	50.0	45.4		ug/L		91	80 - 121	4	20
Naphthalene	50.0	47.2		ug/L		94	61 - 128	6	20
n-Butylbenzene	50.0	48.2		ug/L		96	75 - 128	4	20
N-Propylbenzene	50.0	46.0		ug/L		92	76 - 126	5	20
o-Xylene	50.0	46.1		ug/L		92	78 - 122	6	20
sec-Butylbenzene	50.0	46.3		ug/L		93	77 - 126	2	20
Styrene	50.0	47.1		ug/L		94	78 - 123	3	20
tert-Butylbenzene	50.0	45.9		ug/L		92	78 - 124	3	20
Tetrachloroethene	50.0	47.5		ug/L		95	74 - 129	1	20
Toluene	50.0	46.5		ug/L		93	80 - 121	2	20
trans-1,2-Dichloroethene	50.0	46.1		ug/L		92	75 - 124	5	20
trans-1,3-Dichloropropene	50.0	48.9		ug/L		98	73 - 127	4	20
Trichloroethene	50.0	45.9		ug/L		92	79 - 123	0	20
Trichlorofluoromethane	50.0	48.1		ug/L		96	65 - 141	1	20
Vinyl acetate	100	103		ug/L		103	54 - 146	9	20
Vinyl chloride	50.0	44.2		ug/L		88	58 - 137	3	20
Xylenes, Total	100	91.5		ug/L		92	79 - 121	5	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*81 - 118*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*
Dibromofluoromethane (Surr)	*97*		*80 - 119*
Toluene-d8 (Surr)	*93*		*89 - 112*

Lab Sample ID: 680-167491-7 MS
Matrix: Water
Analysis Batch: 567432

Client Sample ID: 32M-01-17XBR_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	1.0	U	50.0	44.5		ug/L		89	78 - 124

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

Lab Sample ID: 680-167491-7 MS
Matrix: Water
Analysis Batch: 567432

Client Sample ID: 32M-01-17XBR_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	1.0	U	50.0	47.7		ug/L		95	74 - 131
1,1,2,2-Tetrachloroethane	1.0	U	50.0	50.8		ug/L		102	71 - 121
1,1,2-Trichloroethane	0.50	U	50.0	45.7		ug/L		91	80 - 119
1,1-Dichloroethane	1.0	U	50.0	48.3		ug/L		97	77 - 125
1,1-Dichloroethene	1.0	U	50.0	44.3		ug/L		89	71 - 131
1,1-Dichloropropene	1.0	U	50.0	48.1		ug/L		96	79 - 125
1,2,3-Trichlorobenzene	5.0	U	50.0	48.2		ug/L		96	69 - 129
1,2,3-Trichloropropane	1.0	U	50.0	51.8		ug/L		104	73 - 122
1,2,4-Trichlorobenzene	5.0	U	50.0	48.6		ug/L		97	69 - 130
1,2,4-Trimethylbenzene	1.0	U	50.0	47.0		ug/L		94	76 - 124
1,2-Dibromo-3-Chloropropane	2.0	U	50.0	51.8		ug/L		104	62 - 128
1,2-Dichlorobenzene	1.0	U	50.0	46.9		ug/L		94	80 - 119
1,2-Dichloroethane	1.0	U M	50.0	46.8		ug/L		94	73 - 128
1,2-Dichloroethene, Total	0.91	J	100	93.9		ug/L		93	79 - 121
1,2-Dichloropropane	1.0	U	50.0	46.1		ug/L		92	78 - 122
1,3,5-Trimethylbenzene	0.50	U	50.0	45.8		ug/L		92	75 - 124
1,3-Dichlorobenzene	0.45	J	50.0	45.3		ug/L		90	80 - 119
1,3-Dichloropropane	1.0	U	50.0	46.2		ug/L		92	80 - 119
1,4-Dichlorobenzene	1.0	U	50.0	44.6		ug/L		89	79 - 118
2,2-Dichloropropane	1.0	U	50.0	41.0		ug/L		82	60 - 139
2-Butanone (MEK)	10	U	250	247		ug/L		99	56 - 143
2-Chlorotoluene	0.50	U	50.0	45.7		ug/L		91	79 - 122
2-Hexanone	5.0	U	250	276		ug/L		110	57 - 139
4-Chlorotoluene	1.0	U	50.0	44.7		ug/L		89	78 - 122
4-Isopropyltoluene	1.0	U	50.0	47.1		ug/L		94	77 - 127
4-Methyl-2-pentanone (MIBK)	5.0	U	250	281		ug/L		112	67 - 130
Acetone	10	U	250	271		ug/L		108	39 - 160
Benzene	1.0	U	50.0	44.5		ug/L		89	79 - 120
Bromobenzene	1.0	U	50.0	48.0		ug/L		96	80 - 120
Bromoform	1.0	U	50.0	44.7		ug/L		89	66 - 130
Bromomethane	5.0	U	50.0	36.3	M	ug/L		73	53 - 141
Carbon disulfide	2.0	U	50.0	40.8	M	ug/L		82	64 - 133
Carbon tetrachloride	0.50	U	50.0	39.6		ug/L		79	72 - 136
Chlorobenzene	0.50	U	50.0	47.9		ug/L		96	82 - 118
Chlorobromomethane	1.0	U	50.0	48.1		ug/L		96	78 - 123
Chlorodibromomethane	0.50	U	50.0	43.5		ug/L		87	74 - 126
Chloroethane	5.0	U	50.0	59.0	M	ug/L		118	60 - 138
Chloroform	1.0	U	50.0	46.2		ug/L		92	79 - 124
Chloromethane	1.0	U J1 Q	50.0	91.1	M J1	ug/L		182	50 - 139
cis-1,2-Dichloroethene	0.91	J	50.0	46.2		ug/L		91	78 - 123
cis-1,3-Dichloropropene	1.0	U	50.0	43.2		ug/L		86	75 - 124
Dibromomethane	1.0	U	50.0	45.1		ug/L		90	79 - 123
Dichlorobromomethane	1.0	U	50.0	44.3		ug/L		89	79 - 125
Dichlorodifluoromethane	1.0	U Q	50.0	45.9	M	ug/L		92	32 - 152
Ethylbenzene	0.50	U	50.0	47.6		ug/L		95	79 - 121
Ethylene Dibromide	1.0	U	50.0	46.9		ug/L		94	75 - 127
Hexachlorobutadiene	5.0	U	50.0	46.8		ug/L		94	66 - 134
Isopropylbenzene	1.0	U	50.0	49.1		ug/L		98	72 - 131
Methyl tert-butyl ether	0.50	U	50.0	44.9		ug/L		90	71 - 124

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

Lab Sample ID: 680-167491-7 MS
Matrix: Water
Analysis Batch: 567432

Client Sample ID: 32M-01-17XBR_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	5.0	U	50.0	49.6	M	ug/L		99	74 - 124
m-Xylene & p-Xylene	1.0	U	50.0	46.6		ug/L		93	80 - 121
Naphthalene	5.0	U	50.0	52.8		ug/L		106	61 - 128
n-Butylbenzene	1.0	U	50.0	49.1		ug/L		98	75 - 128
N-Propylbenzene	1.0	U	50.0	47.9		ug/L		96	76 - 126
o-Xylene	0.50	U	50.0	46.3		ug/L		93	78 - 122
sec-Butylbenzene	1.0	U	50.0	48.5		ug/L		97	77 - 126
Styrene	0.50	U	50.0	45.3		ug/L		91	78 - 123
tert-Butylbenzene	1.0	U	50.0	47.8		ug/L		96	78 - 124
Tetrachloroethene	1.0	U	50.0	49.0		ug/L		98	74 - 129
Toluene	1.0	U	50.0	46.8		ug/L		94	80 - 121
trans-1,2-Dichloroethene	1.0	U	50.0	47.6		ug/L		95	75 - 124
trans-1,3-Dichloropropene	1.0	U	50.0	43.3		ug/L		87	73 - 127
Trichloroethene	1.0	U	50.0	44.7		ug/L		89	79 - 123
Trichlorofluoromethane	1.0	U	50.0	49.5	M	ug/L		99	65 - 141
Vinyl acetate	2.0	U	100	100		ug/L		100	54 - 146
Vinyl chloride	1.0	U	50.0	53.2	M	ug/L		106	58 - 137
Xylenes, Total	0.50	U	100	92.9		ug/L		93	79 - 121

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*81 - 118*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*
Dibromofluoromethane (Surr)	*94*		*80 - 119*
Toluene-d8 (Surr)	*94*		*89 - 112*

Lab Sample ID: 680-167491-7 MSD
Matrix: Water
Analysis Batch: 567432

Client Sample ID: 32M-01-17XBR_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	1.0	U	50.0	44.0		ug/L		88	78 - 124	1	20
1,1,1-Trichloroethane	1.0	U	50.0	48.2		ug/L		96	74 - 131	1	20
1,1,2,2-Tetrachloroethane	1.0	U	50.0	50.9		ug/L		102	71 - 121	0	20
1,1,2-Trichloroethane	0.50	U	50.0	46.1		ug/L		92	80 - 119	1	20
1,1-Dichloroethane	1.0	U	50.0	47.6		ug/L		95	77 - 125	1	20
1,1-Dichloroethene	1.0	U	50.0	44.6		ug/L		89	71 - 131	1	20
1,1-Dichloropropene	1.0	U	50.0	49.9		ug/L		100	79 - 125	4	20
1,2,3-Trichlorobenzene	5.0	U	50.0	49.1		ug/L		98	69 - 129	2	20
1,2,3-Trichloropropane	1.0	U	50.0	52.0		ug/L		104	73 - 122	1	20
1,2,4-Trichlorobenzene	5.0	U	50.0	49.9		ug/L		100	69 - 130	3	20
1,2,4-Trimethylbenzene	1.0	U	50.0	46.3		ug/L		93	76 - 124	2	20
1,2-Dibromo-3-Chloropropane	2.0	U	50.0	56.5		ug/L		113	62 - 128	9	20
1,2-Dichlorobenzene	1.0	U	50.0	47.9		ug/L		96	80 - 119	2	20
1,2-Dichloroethane	1.0	U M	50.0	47.0		ug/L		94	73 - 128	0	20
1,2-Dichloroethene, Total	0.91	J	100	96.1		ug/L		95	79 - 121	2	20
1,2-Dichloropropane	1.0	U	50.0	46.4		ug/L		93	78 - 122	1	20
1,3,5-Trimethylbenzene	0.50	U	50.0	45.4		ug/L		91	75 - 124	1	20
1,3-Dichlorobenzene	0.45	J	50.0	46.8		ug/L		93	80 - 119	3	20

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

Lab Sample ID: 680-167491-7 MSD
Matrix: Water
Analysis Batch: 567432

Client Sample ID: 32M-01-17XBR_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,3-Dichloropropane	1.0	U	50.0	46.1		ug/L		92	80 - 119	0	20
1,4-Dichlorobenzene	1.0	U	50.0	46.2		ug/L		92	79 - 118	4	20
2,2-Dichloropropane	1.0	U	50.0	41.9		ug/L		84	60 - 139	2	20
2-Butanone (MEK)	10	U	250	262		ug/L		105	56 - 143	6	20
2-Chlorotoluene	0.50	U	50.0	45.9		ug/L		92	79 - 122	1	20
2-Hexanone	5.0	U	250	291		ug/L		116	57 - 139	5	20
4-Chlorotoluene	1.0	U	50.0	44.9		ug/L		90	78 - 122	0	20
4-Isopropyltoluene	1.0	U	50.0	49.1		ug/L		98	77 - 127	4	20
4-Methyl-2-pentanone (MIBK)	5.0	U	250	294		ug/L		118	67 - 130	4	20
Acetone	10	U	250	288		ug/L		115	39 - 160	6	20
Benzene	1.0	U	50.0	45.0		ug/L		90	79 - 120	1	20
Bromobenzene	1.0	U	50.0	46.8		ug/L		94	80 - 120	3	20
Bromoform	1.0	U	50.0	43.5		ug/L		87	66 - 130	3	20
Bromomethane	5.0	U	50.0	38.4	M	ug/L		77	53 - 141	6	20
Carbon disulfide	2.0	U	50.0	44.4		ug/L		89	64 - 133	8	20
Carbon tetrachloride	0.50	U	50.0	40.6		ug/L		81	72 - 136	3	20
Chlorobenzene	0.50	U	50.0	47.4		ug/L		95	82 - 118	1	20
Chlorobromomethane	1.0	U	50.0	47.3	M	ug/L		95	78 - 123	2	20
Chlorodibromomethane	0.50	U	50.0	43.5		ug/L		87	74 - 126	0	20
Chloroethane	5.0	U	50.0	61.7	M	ug/L		123	60 - 138	4	20
Chloroform	1.0	U	50.0	46.5		ug/L		93	79 - 124	1	20
Chloromethane	1.0	U J1 Q	50.0	78.8	M J1	ug/L		158	50 - 139	15	20
cis-1,2-Dichloroethene	0.91	J	50.0	46.6		ug/L		91	78 - 123	1	20
cis-1,3-Dichloropropene	1.0	U	50.0	44.1		ug/L		88	75 - 124	2	20
Dibromomethane	1.0	U	50.0	45.4		ug/L		91	79 - 123	1	20
Dichlorobromomethane	1.0	U	50.0	43.8		ug/L		88	79 - 125	1	20
Dichlorodifluoromethane	1.0	U Q	50.0	48.6	M	ug/L		97	32 - 152	6	20
Ethylbenzene	0.50	U	50.0	47.4		ug/L		95	79 - 121	0	20
Ethylene Dibromide	1.0	U	50.0	46.8		ug/L		94	75 - 127	0	20
Hexachlorobutadiene	5.0	U	50.0	50.1		ug/L		100	66 - 134	7	20
Isopropylbenzene	1.0	U	50.0	49.1		ug/L		98	72 - 131	0	20
Methyl tert-butyl ether	0.50	U	50.0	46.0		ug/L		92	71 - 124	2	20
Methylene Chloride	5.0	U	50.0	50.0	M	ug/L		100	74 - 124	1	20
m-Xylene & p-Xylene	1.0	U	50.0	46.2		ug/L		92	80 - 121	1	20
Naphthalene	5.0	U	50.0	54.1		ug/L		108	61 - 128	3	20
n-Butylbenzene	1.0	U	50.0	51.3		ug/L		103	75 - 128	4	20
N-Propylbenzene	1.0	U	50.0	48.1		ug/L		96	76 - 126	1	20
o-Xylene	0.50	U	50.0	45.9		ug/L		92	78 - 122	1	20
sec-Butylbenzene	1.0	U	50.0	48.4		ug/L		97	77 - 126	0	20
Styrene	0.50	U	50.0	44.9		ug/L		90	78 - 123	1	20
tert-Butylbenzene	1.0	U	50.0	47.2		ug/L		94	78 - 124	1	20
Tetrachloroethene	1.0	U	50.0	49.7		ug/L		99	74 - 129	1	20
Toluene	1.0	U	50.0	47.2		ug/L		94	80 - 121	1	20
trans-1,2-Dichloroethene	1.0	U	50.0	49.4		ug/L		99	75 - 124	4	20
trans-1,3-Dichloropropene	1.0	U	50.0	44.5		ug/L		89	73 - 127	3	20
Trichloroethene	1.0	U	50.0	46.4		ug/L		93	79 - 123	4	20
Trichlorofluoromethane	1.0	U	50.0	52.7	M	ug/L		105	65 - 141	6	20
Vinyl acetate	2.0	U	100	100		ug/L		100	54 - 146	0	20
Vinyl chloride	1.0	U	50.0	55.2	M	ug/L		110	58 - 137	4	20

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

Lab Sample ID: 680-167491-7 MSD
Matrix: Water
Analysis Batch: 567432

Client Sample ID: 32M-01-17XBR_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Xylenes, Total	0.50	U	100	92.1		ug/L		92	79 - 121	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*81 - 118*
4-Bromofluorobenzene (Surr)	*103*		*85 - 114*
Dibromofluoromethane (Surr)	*94*		*80 - 119*
Toluene-d8 (Surr)	*96*		*89 - 112*

Lab Sample ID: MB 680-567541/10
Matrix: Water
Analysis Batch: 567541

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 23:04	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 23:04	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		04/23/19 23:04	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 23:04	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		04/23/19 23:04	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		04/23/19 23:04	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		04/23/19 23:04	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:04	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		04/23/19 23:04	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:04	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		04/23/19 23:04	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		04/23/19 23:04	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 23:04	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 23:04	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		04/23/19 23:04	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		04/23/19 23:04	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		04/23/19 23:04	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		04/23/19 23:04	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		04/23/19 23:04	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		04/23/19 23:04	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 23:04	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		04/23/19 23:04	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		04/23/19 23:04	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		04/23/19 23:04	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		04/23/19 23:04	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 23:04	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		04/23/19 23:04	1
Acetone	10	U	10	10	7.0	ug/L		04/23/19 23:04	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		04/23/19 23:04	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 23:04	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		04/23/19 23:04	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:04	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		04/23/19 23:04	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 23:04	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		04/23/19 23:04	1

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

Lab Sample ID: MB 680-567541/10
Matrix: Water
Analysis Batch: 567541

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		04/23/19 23:04	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		04/23/19 23:04	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:04	1
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 23:04	1
Chloromethane	1.0	U	1.0	1.0	0.40	ug/L		04/23/19 23:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		04/23/19 23:04	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		04/23/19 23:04	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		04/23/19 23:04	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		04/23/19 23:04	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		04/23/19 23:04	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		04/23/19 23:04	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		04/23/19 23:04	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:04	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		04/23/19 23:04	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		04/23/19 23:04	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:04	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		04/23/19 23:04	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		04/23/19 23:04	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		04/23/19 23:04	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		04/23/19 23:04	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		04/23/19 23:04	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		04/23/19 23:04	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		04/23/19 23:04	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		04/23/19 23:04	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		04/23/19 23:04	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 23:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		04/23/19 23:04	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		04/23/19 23:04	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		04/23/19 23:04	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		04/23/19 23:04	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		04/23/19 23:04	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		04/23/19 23:04	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		04/23/19 23:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*81 - 118*		*04/23/19 23:04*	*1*
4-Bromofluorobenzene (Surr)	*90*		*85 - 114*		*04/23/19 23:04*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 119*		*04/23/19 23:04*	*1*
Toluene-d8 (Surr)	*87*	*Q*	*89 - 112*		*04/23/19 23:04*	*1*

Lab Sample ID: LCS 680-567541/1005
Matrix: Water
Analysis Batch: 567541

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	50.0	50.8		ug/L		102	78 - 124
1,1,1-Trichloroethane	50.0	50.3		ug/L		101	74 - 131
1,1,2,2-Tetrachloroethane	50.0	43.2		ug/L		86	71 - 121

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

Lab Sample ID: LCS 680-567541/1005
Matrix: Water
Analysis Batch: 567541

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,2-Trichloroethane	50.0	45.9		ug/L		92	80 - 119
1,1-Dichloroethane	50.0	48.3		ug/L		97	77 - 125
1,1-Dichloroethene	50.0	50.6		ug/L		101	71 - 131
1,1-Dichloropropene	50.0	50.5		ug/L		101	79 - 125
1,2,3-Trichlorobenzene	50.0	49.1		ug/L		98	69 - 129
1,2,3-Trichloropropane	50.0	45.3		ug/L		91	73 - 122
1,2,4-Trichlorobenzene	50.0	51.9		ug/L		104	69 - 130
1,2,4-Trimethylbenzene	50.0	48.9		ug/L		98	76 - 124
1,2-Dibromo-3-Chloropropane	50.0	51.2		ug/L		102	62 - 128
1,2-Dichlorobenzene	50.0	52.1		ug/L		104	80 - 119
1,2-Dichloroethane	50.0	46.7		ug/L		93	73 - 128
1,2-Dichloroethene, Total	100	96.2		ug/L		96	79 - 121
1,2-Dichloropropane	50.0	46.7		ug/L		93	78 - 122
1,3,5-Trimethylbenzene	50.0	50.5		ug/L		101	75 - 124
1,3-Dichlorobenzene	50.0	51.0		ug/L		102	80 - 119
1,3-Dichloropropane	50.0	44.9		ug/L		90	80 - 119
1,4-Dichlorobenzene	50.0	50.4		ug/L		101	79 - 118
2,2-Dichloropropane	50.0	44.7	M	ug/L		89	60 - 139
2-Butanone (MEK)	250	214		ug/L		85	56 - 143
2-Chlorotoluene	50.0	50.5		ug/L		101	79 - 122
2-Hexanone	250	226		ug/L		91	57 - 139
4-Chlorotoluene	50.0	49.2		ug/L		98	78 - 122
4-Isopropyltoluene	50.0	55.4		ug/L		111	77 - 127
4-Methyl-2-pentanone (MIBK)	250	222		ug/L		89	67 - 130
Acetone	250	227		ug/L		91	39 - 160
Benzene	50.0	47.8		ug/L		96	79 - 120
Bromobenzene	50.0	48.1		ug/L		96	80 - 120
Bromoform	50.0	46.1		ug/L		92	66 - 130
Bromomethane	50.0	60.8	J1	ug/L		122	53 - 141
Carbon disulfide	50.0	49.7		ug/L		99	64 - 133
Carbon tetrachloride	50.0	52.4		ug/L		105	72 - 136
Chlorobenzene	50.0	50.3		ug/L		101	82 - 118
Chlorobromomethane	50.0	44.4		ug/L		89	78 - 123
Chlorodibromomethane	50.0	46.9		ug/L		94	74 - 126
Chloroethane	50.0	51.5		ug/L		103	60 - 138
Chloroform	50.0	49.7		ug/L		99	79 - 124
Chloromethane	50.0	52.5	M	ug/L		105	50 - 139
cis-1,2-Dichloroethene	50.0	47.9		ug/L		96	78 - 123
cis-1,3-Dichloropropene	50.0	46.0		ug/L		92	75 - 124
Dibromomethane	50.0	44.9		ug/L		90	79 - 123
Dichlorobromomethane	50.0	47.6		ug/L		95	79 - 125
Dichlorodifluoromethane	50.0	68.4		ug/L		137	32 - 152
Ethylbenzene	50.0	51.2		ug/L		102	79 - 121
Ethylene Dibromide	50.0	47.2		ug/L		94	75 - 127
Hexachlorobutadiene	50.0	57.3		ug/L		115	66 - 134
Isopropylbenzene	50.0	51.4		ug/L		103	72 - 131
Methyl tert-butyl ether	50.0	45.9		ug/L		92	71 - 124
Methylene Chloride	50.0	44.4		ug/L		89	74 - 124
m-Xylene & p-Xylene	50.0	50.6		ug/L		101	80 - 121

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

Lab Sample ID: LCS 680-567541/1005
Matrix: Water
Analysis Batch: 567541

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	50.0	48.2		ug/L		96	61 - 128
n-Butylbenzene	50.0	56.9		ug/L		114	75 - 128
N-Propylbenzene	50.0	51.5		ug/L		103	76 - 126
o-Xylene	50.0	51.9		ug/L		104	78 - 122
sec-Butylbenzene	50.0	52.4		ug/L		105	77 - 126
Styrene	50.0	49.8		ug/L		100	78 - 123
tert-Butylbenzene	50.0	52.1		ug/L		104	78 - 124
Tetrachloroethene	50.0	51.1		ug/L		102	74 - 129
Toluene	50.0	47.4		ug/L		95	80 - 121
trans-1,2-Dichloroethene	50.0	48.3		ug/L		97	75 - 124
trans-1,3-Dichloropropene	50.0	46.4		ug/L		93	73 - 127
Trichloroethene	50.0	51.8		ug/L		104	79 - 123
Trichlorofluoromethane	50.0	63.6		ug/L		127	65 - 141
Vinyl acetate	100	76.4		ug/L		76	54 - 146
Vinyl chloride	50.0	54.3		ug/L		109	58 - 137
Xylenes, Total	100	103		ug/L		103	79 - 121

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*81 - 118*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*
Dibromofluoromethane (Surr)	*95*		*80 - 119*
Toluene-d8 (Surr)	*95*		*89 - 112*

Lab Sample ID: LCSD 680-567541/6
Matrix: Water
Analysis Batch: 567541

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	50.0	44.8		ug/L		90	78 - 124	13	20
1,1,1-Trichloroethane	50.0	43.0		ug/L		86	74 - 131	16	20
1,1,2,2-Tetrachloroethane	50.0	39.7		ug/L		79	71 - 121	9	20
1,1,2-Trichloroethane	50.0	39.8		ug/L		80	80 - 119	14	20
1,1-Dichloroethane	50.0	44.1		ug/L		88	77 - 125	9	20
1,1-Dichloroethene	50.0	44.1		ug/L		88	71 - 131	14	20
1,1-Dichloropropene	50.0	44.1		ug/L		88	79 - 125	14	20
1,2,3-Trichlorobenzene	50.0	44.6		ug/L		89	69 - 129	10	20
1,2,3-Trichloropropane	50.0	40.0		ug/L		80	73 - 122	13	20
1,2,4-Trichlorobenzene	50.0	44.8		ug/L		90	69 - 130	15	20
1,2,4-Trimethylbenzene	50.0	45.6		ug/L		91	76 - 124	7	20
1,2-Dibromo-3-Chloropropane	50.0	43.7		ug/L		87	62 - 128	16	20
1,2-Dichlorobenzene	50.0	46.0		ug/L		92	80 - 119	12	20
1,2-Dichloroethane	50.0	42.4		ug/L		85	73 - 128	10	20
1,2-Dichloroethene, Total	100	87.7		ug/L		88	79 - 121	9	20
1,2-Dichloropropane	50.0	41.3		ug/L		83	78 - 122	12	20
1,3,5-Trimethylbenzene	50.0	44.6		ug/L		89	75 - 124	12	20
1,3-Dichlorobenzene	50.0	46.7		ug/L		93	80 - 119	9	20
1,3-Dichloropropane	50.0	39.5	Q	ug/L		79	80 - 119	13	20
1,4-Dichlorobenzene	50.0	45.8		ug/L		92	79 - 118	10	20

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

Lab Sample ID: LCSD 680-567541/6
Matrix: Water
Analysis Batch: 567541

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,2-Dichloropropane	50.0	39.1		ug/L		78	60 - 139	13	20
2-Butanone (MEK)	250	194		ug/L		77	56 - 143	10	20
2-Chlorotoluene	50.0	45.2		ug/L		90	79 - 122	11	20
2-Hexanone	250	188		ug/L		75	57 - 139	18	20
4-Chlorotoluene	50.0	45.4		ug/L		91	78 - 122	8	20
4-Isopropyltoluene	50.0	50.3		ug/L		101	77 - 127	10	20
4-Methyl-2-pentanone (MIBK)	250	192		ug/L		77	67 - 130	14	20
Acetone	250	206		ug/L		82	39 - 160	10	20
Benzene	50.0	42.7		ug/L		85	79 - 120	11	20
Bromobenzene	50.0	43.7		ug/L		87	80 - 120	10	20
Bromoform	50.0	40.2		ug/L		80	66 - 130	14	20
Bromomethane	50.0	54.1	J1	ug/L		108	53 - 141	12	20
Carbon disulfide	50.0	44.9		ug/L		90	64 - 133	10	20
Carbon tetrachloride	50.0	43.8		ug/L		88	72 - 136	18	20
Chlorobenzene	50.0	45.1		ug/L		90	82 - 118	11	20
Chlorobromomethane	50.0	38.1	Q	ug/L		76	78 - 123	15	20
Chlorodibromomethane	50.0	40.3		ug/L		81	74 - 126	15	20
Chloroethane	50.0	48.6		ug/L		97	60 - 138	6	20
Chloroform	50.0	42.7		ug/L		85	79 - 124	15	20
Chloromethane	50.0	49.0	M	ug/L		98	50 - 139	7	20
cis-1,2-Dichloroethene	50.0	42.9		ug/L		86	78 - 123	11	20
cis-1,3-Dichloropropene	50.0	40.0		ug/L		80	75 - 124	14	20
Dibromomethane	50.0	38.7	Q	ug/L		77	79 - 123	15	20
Dichlorobromomethane	50.0	40.4		ug/L		81	79 - 125	16	20
Dichlorodifluoromethane	50.0	58.6		ug/L		117	32 - 152	15	20
Ethylbenzene	50.0	45.7		ug/L		91	79 - 121	11	20
Ethylene Dibromide	50.0	40.1		ug/L		80	75 - 127	16	20
Hexachlorobutadiene	50.0	49.1		ug/L		98	66 - 134	15	20
Isopropylbenzene	50.0	46.4		ug/L		93	72 - 131	10	20
Methyl tert-butyl ether	50.0	43.0		ug/L		86	71 - 124	6	20
Methylene Chloride	50.0	41.2		ug/L		82	74 - 124	8	20
m-Xylene & p-Xylene	50.0	48.2		ug/L		96	80 - 121	5	20
Naphthalene	50.0	42.1		ug/L		84	61 - 128	13	20
n-Butylbenzene	50.0	49.7		ug/L		99	75 - 128	13	20
N-Propylbenzene	50.0	47.2		ug/L		94	76 - 126	9	20
o-Xylene	50.0	47.1		ug/L		94	78 - 122	10	20
sec-Butylbenzene	50.0	51.1		ug/L		102	77 - 126	2	20
Styrene	50.0	45.1		ug/L		90	78 - 123	10	20
tert-Butylbenzene	50.0	48.5		ug/L		97	78 - 124	7	20
Tetrachloroethene	50.0	44.2		ug/L		88	74 - 129	14	20
Toluene	50.0	42.6		ug/L		85	80 - 121	11	20
trans-1,2-Dichloroethene	50.0	44.8		ug/L		90	75 - 124	7	20
trans-1,3-Dichloropropene	50.0	41.0		ug/L		82	73 - 127	13	20
Trichloroethene	50.0	45.8		ug/L		92	79 - 123	12	20
Trichlorofluoromethane	50.0	52.0		ug/L		104	65 - 141	20	20
Vinyl acetate	100	70.0		ug/L		70	54 - 146	9	20
Vinyl chloride	50.0	49.2		ug/L		98	58 - 137	10	20
Xylenes, Total	100	95.3		ug/L		95	79 - 121	7	20

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

Lab Sample ID: LCSD 680-567541/6
Matrix: Water
Analysis Batch: 567541

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*79*	*Q*	*81 - 118*
4-Bromofluorobenzene (Surr)	*90*		*85 - 114*
Dibromofluoromethane (Surr)	*81*		*80 - 119*
Toluene-d8 (Surr)	*84*	*Q*	*89 - 112*

Lab Sample ID: MB 680-568059/10
Matrix: Water
Analysis Batch: 568059

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	1.0	U	1.0	1.0	0.37	ug/L		04/27/19 01:53	1
1,1,1-Trichloroethane	1.0	U	1.0	1.0	0.37	ug/L		04/27/19 01:53	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	1.0	0.62	ug/L		04/27/19 01:53	1
1,1,2-Trichloroethane	0.50	U	1.0	0.50	0.33	ug/L		04/27/19 01:53	1
1,1-Dichloroethane	1.0	U	1.0	1.0	0.38	ug/L		04/27/19 01:53	1
1,1-Dichloroethene	1.0	U	1.0	1.0	0.36	ug/L		04/27/19 01:53	1
1,1-Dichloropropene	1.0	U	1.0	1.0	0.34	ug/L		04/27/19 01:53	1
1,2,3-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		04/27/19 01:53	1
1,2,3-Trichloropropane	1.0	U	1.0	1.0	0.39	ug/L		04/27/19 01:53	1
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	2.5	ug/L		04/27/19 01:53	1
1,2,4-Trimethylbenzene	1.0	U	1.0	1.0	0.47	ug/L		04/27/19 01:53	1
1,2-Dibromo-3-Chloropropane	2.0	U	5.0	2.0	1.1	ug/L		04/27/19 01:53	1
1,2-Dichlorobenzene	1.0	U	1.0	1.0	0.37	ug/L		04/27/19 01:53	1
1,2-Dichloroethane	1.0	U	1.0	1.0	0.50	ug/L		04/27/19 01:53	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.74	ug/L		04/27/19 01:53	1
1,2-Dichloropropane	1.0	U	1.0	1.0	0.67	ug/L		04/27/19 01:53	1
1,3,5-Trimethylbenzene	0.50	U	1.0	0.50	0.31	ug/L		04/27/19 01:53	1
1,3-Dichlorobenzene	1.0	U	1.0	1.0	0.43	ug/L		04/27/19 01:53	1
1,3-Dichloropropane	1.0	U	1.0	1.0	0.34	ug/L		04/27/19 01:53	1
1,4-Dichlorobenzene	1.0	U	1.0	1.0	0.46	ug/L		04/27/19 01:53	1
2,2-Dichloropropane	1.0	U	1.0	1.0	0.37	ug/L		04/27/19 01:53	1
2-Butanone (MEK)	10	U	10	10	3.4	ug/L		04/27/19 01:53	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.27	ug/L		04/27/19 01:53	1
2-Hexanone	5.0	U	10	5.0	2.0	ug/L		04/27/19 01:53	1
4-Chlorotoluene	1.0	U	1.0	1.0	0.45	ug/L		04/27/19 01:53	1
4-Isopropyltoluene	1.0	U	1.0	1.0	0.48	ug/L		04/27/19 01:53	1
4-Methyl-2-pentanone (MIBK)	5.0	U	10	5.0	2.1	ug/L		04/27/19 01:53	1
Acetone	10	U	10	10	7.0	ug/L		04/27/19 01:53	1
Benzene	1.0	U	1.0	1.0	0.43	ug/L		04/27/19 01:53	1
Bromobenzene	1.0	U	1.0	1.0	0.50	ug/L		04/27/19 01:53	1
Bromoform	1.0	U	1.0	1.0	0.43	ug/L		04/27/19 01:53	1
Bromomethane	5.0	U	5.0	5.0	2.5	ug/L		04/27/19 01:53	1
Carbon disulfide	2.0	U	2.0	2.0	0.43	ug/L		04/27/19 01:53	1
Carbon tetrachloride	0.50	U	1.0	0.50	0.33	ug/L		04/27/19 01:53	1
Chlorobenzene	0.50	U	1.0	0.50	0.26	ug/L		04/27/19 01:53	1
Chlorobromomethane	1.0	U	1.0	1.0	0.45	ug/L		04/27/19 01:53	1
Chlorodibromomethane	0.50	U	1.0	0.50	0.32	ug/L		04/27/19 01:53	1
Chloroethane	5.0	U	5.0	5.0	2.5	ug/L		04/27/19 01:53	1

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

Lab Sample ID: MB 680-568059/10
Matrix: Water
Analysis Batch: 568059

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloroform	1.0	U	1.0	1.0	0.50	ug/L		04/27/19 01:53	1
Chloromethane	1.0	U M	1.0	1.0	0.40	ug/L		04/27/19 01:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	1.0	0.41	ug/L		04/27/19 01:53	1
cis-1,3-Dichloropropene	1.0	U	1.0	1.0	0.40	ug/L		04/27/19 01:53	1
Dibromomethane	1.0	U	1.0	1.0	0.35	ug/L		04/27/19 01:53	1
Dichlorobromomethane	1.0	U	1.0	1.0	0.44	ug/L		04/27/19 01:53	1
Dichlorodifluoromethane	1.0	U	1.0	1.0	0.60	ug/L		04/27/19 01:53	1
Ethylbenzene	0.50	U	1.0	0.50	0.33	ug/L		04/27/19 01:53	1
Ethylene Dibromide	1.0	U	1.0	1.0	0.44	ug/L		04/27/19 01:53	1
Hexachlorobutadiene	5.0	U	5.0	5.0	2.5	ug/L		04/27/19 01:53	1
Isopropylbenzene	1.0	U	1.0	1.0	0.35	ug/L		04/27/19 01:53	1
Methyl tert-butyl ether	0.50	U	10	0.50	0.30	ug/L		04/27/19 01:53	1
Methylene Chloride	5.0	U	5.0	5.0	2.5	ug/L		04/27/19 01:53	1
m-Xylene & p-Xylene	1.0	U	1.0	1.0	0.35	ug/L		04/27/19 01:53	1
Naphthalene	5.0	U	5.0	5.0	2.5	ug/L		04/27/19 01:53	1
n-Butylbenzene	1.0	U	1.0	1.0	0.47	ug/L		04/27/19 01:53	1
N-Propylbenzene	1.0	U	1.0	1.0	0.38	ug/L		04/27/19 01:53	1
o-Xylene	0.50	U	1.0	0.50	0.23	ug/L		04/27/19 01:53	1
sec-Butylbenzene	1.0	U	1.0	1.0	0.42	ug/L		04/27/19 01:53	1
Styrene	0.50	U	1.0	0.50	0.27	ug/L		04/27/19 01:53	1
tert-Butylbenzene	1.0	U	1.0	1.0	0.45	ug/L		04/27/19 01:53	1
Tetrachloroethene	1.0	U	1.0	1.0	0.74	ug/L		04/27/19 01:53	1
Toluene	1.0	U	1.0	1.0	0.48	ug/L		04/27/19 01:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	1.0	0.37	ug/L		04/27/19 01:53	1
trans-1,3-Dichloropropene	1.0	U	1.0	1.0	0.42	ug/L		04/27/19 01:53	1
Trichloroethene	1.0	U	1.0	1.0	0.48	ug/L		04/27/19 01:53	1
Trichlorofluoromethane	1.0	U	1.0	1.0	0.42	ug/L		04/27/19 01:53	1
Vinyl acetate	2.0	U	2.0	2.0	0.81	ug/L		04/27/19 01:53	1
Vinyl chloride	1.0	U	1.0	1.0	0.50	ug/L		04/27/19 01:53	1
Xylenes, Total	0.50	U	2.0	0.50	0.23	ug/L		04/27/19 01:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*81 - 118*		*04/27/19 01:53*	*1*
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*		*04/27/19 01:53*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 119*		*04/27/19 01:53*	*1*
Toluene-d8 (Surr)	*95*		*89 - 112*		*04/27/19 01:53*	*1*

Lab Sample ID: LCS 680-568059/5
Matrix: Water
Analysis Batch: 568059

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	50.0	49.7		ug/L		99	78 - 124
1,1,1-Trichloroethane	50.0	46.3		ug/L		93	74 - 131
1,1,2,2-Tetrachloroethane	50.0	49.4		ug/L		99	71 - 121
1,1,2-Trichloroethane	50.0	50.8		ug/L		102	80 - 119
1,1-Dichloroethane	50.0	48.0		ug/L		96	77 - 125
1,1-Dichloroethene	50.0	47.9		ug/L		96	71 - 131

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

Lab Sample ID: LCS 680-568059/5
Matrix: Water
Analysis Batch: 568059

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloropropene	50.0	45.2		ug/L		90	79 - 125
1,2,3-Trichlorobenzene	50.0	47.9		ug/L		96	69 - 129
1,2,3-Trichloropropane	50.0	51.9		ug/L		104	73 - 122
1,2,4-Trichlorobenzene	50.0	48.6		ug/L		97	69 - 130
1,2,4-Trimethylbenzene	50.0	49.0		ug/L		98	76 - 124
1,2-Dibromo-3-Chloropropane	50.0	47.4		ug/L		95	62 - 128
1,2-Dichlorobenzene	50.0	50.3		ug/L		101	80 - 119
1,2-Dichloroethane	50.0	51.2		ug/L		102	73 - 128
1,2-Dichloroethene, Total	100	96.4		ug/L		96	79 - 121
1,2-Dichloropropane	50.0	47.2		ug/L		94	78 - 122
1,3,5-Trimethylbenzene	50.0	47.2		ug/L		94	75 - 124
1,3-Dichlorobenzene	50.0	49.4		ug/L		99	80 - 119
1,3-Dichloropropane	50.0	49.6		ug/L		99	80 - 119
1,4-Dichlorobenzene	50.0	48.8		ug/L		98	79 - 118
2,2-Dichloropropane	50.0	38.1		ug/L		76	60 - 139
2-Butanone (MEK)	250	241		ug/L		96	56 - 143
2-Chlorotoluene	50.0	47.3		ug/L		95	79 - 122
2-Hexanone	250	240		ug/L		96	57 - 139
4-Chlorotoluene	50.0	47.3		ug/L		95	78 - 122
4-Isopropyltoluene	50.0	45.3		ug/L		91	77 - 127
4-Methyl-2-pentanone (MIBK)	250	243		ug/L		97	67 - 130
Acetone	250	225		ug/L		90	39 - 160
Benzene	50.0	46.0		ug/L		92	79 - 120
Bromobenzene	50.0	52.8		ug/L		106	80 - 120
Bromoform	50.0	49.7		ug/L		99	66 - 130
Bromomethane	50.0	48.3		ug/L		97	53 - 141
Carbon disulfide	50.0	44.3		ug/L		89	64 - 133
Carbon tetrachloride	50.0	43.7		ug/L		87	72 - 136
Chlorobenzene	50.0	51.0		ug/L		102	82 - 118
Chlorobromomethane	50.0	53.8		ug/L		108	78 - 123
Chlorodibromomethane	50.0	52.0		ug/L		104	74 - 126
Chloroethane	50.0	61.4	M	ug/L		123	60 - 138
Chloroform	50.0	48.7		ug/L		97	79 - 124
Chloromethane	50.0	82.3	M Q	ug/L		165	50 - 139
cis-1,2-Dichloroethene	50.0	45.4		ug/L		91	78 - 123
cis-1,3-Dichloropropene	50.0	47.3		ug/L		95	75 - 124
Dibromomethane	50.0	51.0		ug/L		102	79 - 123
Dichlorobromomethane	50.0	48.9		ug/L		98	79 - 125
Dichlorodifluoromethane	50.0	40.7	M	ug/L		81	32 - 152
Ethylbenzene	50.0	47.8		ug/L		96	79 - 121
Ethylene Dibromide	50.0	52.5		ug/L		105	75 - 127
Hexachlorobutadiene	50.0	45.6		ug/L		91	66 - 134
Isopropylbenzene	50.0	48.0		ug/L		96	72 - 131
Methyl tert-butyl ether	50.0	50.1		ug/L		100	71 - 124
Methylene Chloride	50.0	54.5	M	ug/L		109	74 - 124
m-Xylene & p-Xylene	50.0	46.5		ug/L		93	80 - 121
Naphthalene	50.0	50.1		ug/L		100	61 - 128
n-Butylbenzene	50.0	44.6		ug/L		89	75 - 128
N-Propylbenzene	50.0	47.4		ug/L		95	76 - 126

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

Lab Sample ID: LCS 680-568059/5
Matrix: Water
Analysis Batch: 568059

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
o-Xylene	50.0	48.1		ug/L		96	78 - 122
sec-Butylbenzene	50.0	45.9		ug/L		92	77 - 126
Styrene	50.0	50.2		ug/L		100	78 - 123
tert-Butylbenzene	50.0	46.8		ug/L		94	78 - 124
Tetrachloroethene	50.0	47.4		ug/L		95	74 - 129
Toluene	50.0	48.6		ug/L		97	80 - 121
trans-1,2-Dichloroethene	50.0	51.0		ug/L		102	75 - 124
trans-1,3-Dichloropropene	50.0	48.1		ug/L		96	73 - 127
Trichloroethene	50.0	47.9		ug/L		96	79 - 123
Trichlorofluoromethane	50.0	59.2	M	ug/L		118	65 - 141
Vinyl acetate	100	82.2		ug/L		82	54 - 146
Vinyl chloride	50.0	48.6	M	ug/L		97	58 - 137
Xylenes, Total	100	94.6		ug/L		95	79 - 121

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*
Dibromofluoromethane (Surr)	*102*		*80 - 119*
Toluene-d8 (Surr)	*98*		*89 - 112*

Lab Sample ID: LCSD 680-568059/6
Matrix: Water
Analysis Batch: 568059

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	50.0	49.6		ug/L		99	78 - 124	0	20
1,1,1-Trichloroethane	50.0	48.9		ug/L		98	74 - 131	5	20
1,1,2,2-Tetrachloroethane	50.0	49.2		ug/L		98	71 - 121	0	20
1,1,2-Trichloroethane	50.0	46.5		ug/L		93	80 - 119	9	20
1,1-Dichloroethane	50.0	48.0		ug/L		96	77 - 125	0	20
1,1-Dichloroethene	50.0	51.7		ug/L		103	71 - 131	8	20
1,1-Dichloropropene	50.0	46.0		ug/L		92	79 - 125	2	20
1,2,3-Trichlorobenzene	50.0	51.2		ug/L		102	69 - 129	7	20
1,2,3-Trichloropropane	50.0	53.7		ug/L		107	73 - 122	3	20
1,2,4-Trichlorobenzene	50.0	51.6		ug/L		103	69 - 130	6	20
1,2,4-Trimethylbenzene	50.0	52.1		ug/L		104	76 - 124	6	20
1,2-Dibromo-3-Chloropropane	50.0	50.6		ug/L		101	62 - 128	7	20
1,2-Dichlorobenzene	50.0	52.3		ug/L		105	80 - 119	4	20
1,2-Dichloroethane	50.0	50.6		ug/L		101	73 - 128	1	20
1,2-Dichloroethene, Total	100	99.4		ug/L		99	79 - 121	3	20
1,2-Dichloropropane	50.0	44.4		ug/L		89	78 - 122	6	20
1,3,5-Trimethylbenzene	50.0	53.1		ug/L		106	75 - 124	12	20
1,3-Dichlorobenzene	50.0	49.1		ug/L		98	80 - 119	1	20
1,3-Dichloropropane	50.0	46.0		ug/L		92	80 - 119	8	20
1,4-Dichlorobenzene	50.0	49.8		ug/L		100	79 - 118	2	20
2,2-Dichloropropane	50.0	39.7		ug/L		79	60 - 139	4	20
2-Butanone (MEK)	250	242		ug/L		97	56 - 143	0	20
2-Chlorotoluene	50.0	49.1		ug/L		98	79 - 122	4	20

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

Lab Sample ID: LCSD 680-568059/6
Matrix: Water
Analysis Batch: 568059

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Hexanone	250	216		ug/L		86	57 - 139	11	20
4-Chlorotoluene	50.0	53.0		ug/L		106	78 - 122	11	20
4-Isopropyltoluene	50.0	46.2		ug/L		92	77 - 127	2	20
4-Methyl-2-pentanone (MIBK)	250	214		ug/L		86	67 - 130	13	20
Acetone	250	229		ug/L		92	39 - 160	2	20
Benzene	50.0	46.9		ug/L		94	79 - 120	2	20
Bromobenzene	50.0	53.8		ug/L		108	80 - 120	2	20
Bromoform	50.0	50.2		ug/L		100	66 - 130	1	20
Bromomethane	50.0	50.8		ug/L		102	53 - 141	5	20
Carbon disulfide	50.0	48.9		ug/L		98	64 - 133	10	20
Carbon tetrachloride	50.0	46.2		ug/L		92	72 - 136	6	20
Chlorobenzene	50.0	51.8		ug/L		104	82 - 118	1	20
Chlorobromomethane	50.0	53.3		ug/L		107	78 - 123	1	20
Chlorodibromomethane	50.0	47.8		ug/L		96	74 - 126	8	20
Chloroethane	50.0	62.2	M	ug/L		124	60 - 138	1	20
Chloroform	50.0	49.0		ug/L		98	79 - 124	1	20
Chloromethane	50.0	85.4	Q	ug/L		171	50 - 139	4	20
cis-1,2-Dichloroethene	50.0	46.5		ug/L		93	78 - 123	2	20
cis-1,3-Dichloropropene	50.0	42.6		ug/L		85	75 - 124	10	20
Dibromomethane	50.0	47.8		ug/L		96	79 - 123	6	20
Dichlorobromomethane	50.0	46.2		ug/L		92	79 - 125	6	20
Dichlorodifluoromethane	50.0	44.1	M	ug/L		88	32 - 152	8	20
Ethylbenzene	50.0	48.8		ug/L		98	79 - 121	2	20
Ethylene Dibromide	50.0	49.6		ug/L		99	75 - 127	6	20
Hexachlorobutadiene	50.0	50.2		ug/L		100	66 - 134	9	20
Isopropylbenzene	50.0	51.0		ug/L		102	72 - 131	6	20
Methyl tert-butyl ether	50.0	50.0		ug/L		100	71 - 124	0	20
Methylene Chloride	50.0	55.5	M	ug/L		111	74 - 124	2	20
m-Xylene & p-Xylene	50.0	47.7		ug/L		95	80 - 121	2	20
Naphthalene	50.0	54.3		ug/L		109	61 - 128	8	20
n-Butylbenzene	50.0	51.5		ug/L		103	75 - 128	14	20
N-Propylbenzene	50.0	48.7		ug/L		97	76 - 126	3	20
o-Xylene	50.0	48.7		ug/L		97	78 - 122	1	20
sec-Butylbenzene	50.0	49.9		ug/L		100	77 - 126	8	20
Styrene	50.0	51.2		ug/L		102	78 - 123	2	20
tert-Butylbenzene	50.0	51.8		ug/L		104	78 - 124	10	20
Tetrachloroethene	50.0	49.3		ug/L		99	74 - 129	4	20
Toluene	50.0	45.6		ug/L		91	80 - 121	6	20
trans-1,2-Dichloroethene	50.0	52.9		ug/L		106	75 - 124	4	20
trans-1,3-Dichloropropene	50.0	43.7		ug/L		87	73 - 127	10	20
Trichloroethene	50.0	49.7		ug/L		99	79 - 123	4	20
Trichlorofluoromethane	50.0	64.4	M	ug/L		129	65 - 141	8	20
Vinyl acetate	100	82.5		ug/L		82	54 - 146	0	20
Vinyl chloride	50.0	51.5	M	ug/L		103	58 - 137	6	20
Xylenes, Total	100	96.4		ug/L		96	79 - 121	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*81 - 118*

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

Lab Sample ID: LCSD 680-568059/6
Matrix: Water
Analysis Batch: 568059

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*
Dibromofluoromethane (Surr)	*104*		*80 - 119*
Toluene-d8 (Surr)	*93*		*89 - 112*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-566774/1-A
Matrix: Water
Analysis Batch: 567186

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 566774

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	3.0	U	10	3.0	1.0	ug/L		04/19/19 14:11	1

Lab Sample ID: LCS 680-566774/2-A
Matrix: Water
Analysis Batch: 567186

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 566774

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5000	5170		ug/L		103	87 - 115
Manganese	400	421		ug/L		105	90 - 114

Lab Sample ID: 680-167491-7 MS
Matrix: Water
Analysis Batch: 567186

Client Sample ID: 32M-01-17XBR_SPR19
Prep Type: Total/NA
Prep Batch: 566774

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	41	J	5000	5250		ug/L		104	87 - 115
Manganese	3.0	J	400	419		ug/L		104	90 - 114

Lab Sample ID: 680-167491-7 MSD
Matrix: Water
Analysis Batch: 567186

Client Sample ID: 32M-01-17XBR_SPR19
Prep Type: Total/NA
Prep Batch: 566774

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	41	J	5000	5210		ug/L		103	87 - 115	1	20
Manganese	3.0	J	400	421		ug/L		105	90 - 114	0	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-566772/1-A
Matrix: Water
Analysis Batch: 567081

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 566772

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/18/19 14:20	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 680-566772/2-A
Matrix: Water
Analysis Batch: 567081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 566772

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic			100	104		ug/L		104	84 - 116		

Lab Sample ID: 680-167491-7 MS
Matrix: Water
Analysis Batch: 567081

Client Sample ID: 32M-01-17XBR_SPR19
Prep Type: Total/NA
Prep Batch: 566772

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic	3.0	U	100	96.2		ug/L		96	84 - 116		

Lab Sample ID: 680-167491-7 MSD
Matrix: Water
Analysis Batch: 567081

Client Sample ID: 32M-01-17XBR_SPR19
Prep Type: Total/NA
Prep Batch: 566772

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.0	U	100	103		ug/L		103	84 - 116	6	20

GC/MS VOA

Analysis Batch: 567432

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-7	32M-01-17XBR_SPR19	Total/NA	Water	8260B	
680-167491-10	32M-DUP01_SPR19	Total/NA	Water	8260B	
MB 680-567432/8	Method Blank	Total/NA	Water	8260B	
LCS 680-567432/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-567432/4	Lab Control Sample Dup	Total/NA	Water	8260B	
680-167491-7 MS	32M-01-17XBR_SPR19	Total/NA	Water	8260B	
680-167491-7 MSD	32M-01-17XBR_SPR19	Total/NA	Water	8260B	

Analysis Batch: 567541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-2	32M-TRIP BLANK	Total/NA	Water	8260B	
680-167491-8	32M-01-13XBR_SPR19	Total/NA	Water	8260B	
680-167491-11	32M-01-14XOB_SPR19	Total/NA	Water	8260B	
MB 680-567541/10	Method Blank	Total/NA	Water	8260B	
LCS 680-567541/1005	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-567541/6	Lab Control Sample Dup	Total/NA	Water	8260B	

Analysis Batch: 568059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-9	32M-01-18XBR_SPR19	Total/NA	Water	8260B	
MB 680-568059/10	Method Blank	Total/NA	Water	8260B	
LCS 680-568059/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-568059/6	Lab Control Sample Dup	Total/NA	Water	8260B	

Metals

Prep Batch: 566772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-7	32M-01-17XBR_SPR19	Total/NA	Water	3010A	
680-167491-8	32M-01-13XBR_SPR19	Total/NA	Water	3010A	
680-167491-9	32M-01-18XBR_SPR19	Total/NA	Water	3010A	
680-167491-10	32M-DUP01_SPR19	Total/NA	Water	3010A	
680-167491-11	32M-01-14XOB_SPR19	Total/NA	Water	3010A	
MB 680-566772/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-566772/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-167491-7 MS	32M-01-17XBR_SPR19	Total/NA	Water	3010A	
680-167491-7 MSD	32M-01-17XBR_SPR19	Total/NA	Water	3010A	

Prep Batch: 566774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-7	32M-01-17XBR_SPR19	Total/NA	Water	3010A	
680-167491-8	32M-01-13XBR_SPR19	Total/NA	Water	3010A	
680-167491-9	32M-01-18XBR_SPR19	Total/NA	Water	3010A	
680-167491-10	32M-DUP01_SPR19	Total/NA	Water	3010A	
680-167491-11	32M-01-14XOB_SPR19	Total/NA	Water	3010A	
MB 680-566774/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-566774/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-167491-7 MS	32M-01-17XBR_SPR19	Total/NA	Water	3010A	
680-167491-7 MSD	32M-01-17XBR_SPR19	Total/NA	Water	3010A	

Metals

Analysis Batch: 567081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-7	32M-01-17XBR_SPR19	Total/NA	Water	6020A	566772
680-167491-8	32M-01-13XBR_SPR19	Total/NA	Water	6020A	566772
680-167491-9	32M-01-18XBR_SPR19	Total/NA	Water	6020A	566772
680-167491-10	32M-DUP01_SPR19	Total/NA	Water	6020A	566772
680-167491-11	32M-01-14XOB_SPR19	Total/NA	Water	6020A	566772
MB 680-566772/1-A	Method Blank	Total/NA	Water	6020A	566772
LCS 680-566772/2-A	Lab Control Sample	Total/NA	Water	6020A	566772
680-167491-7 MS	32M-01-17XBR_SPR19	Total/NA	Water	6020A	566772
680-167491-7 MSD	32M-01-17XBR_SPR19	Total/NA	Water	6020A	566772

Analysis Batch: 567186

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-7	32M-01-17XBR_SPR19	Total/NA	Water	6010C	566774
680-167491-8	32M-01-13XBR_SPR19	Total/NA	Water	6010C	566774
680-167491-9	32M-01-18XBR_SPR19	Total/NA	Water	6010C	566774
680-167491-10	32M-DUP01_SPR19	Total/NA	Water	6010C	566774
680-167491-11	32M-01-14XOB_SPR19	Total/NA	Water	6010C	566774
MB 680-566774/1-A	Method Blank	Total/NA	Water	6010C	566774
LCS 680-566774/2-A	Lab Control Sample	Total/NA	Water	6010C	566774
680-167491-7 MS	32M-01-17XBR_SPR19	Total/NA	Water	6010C	566774
680-167491-7 MSD	32M-01-17XBR_SPR19	Total/NA	Water	6010C	566774

Client Sample ID: 32M-TRIP BLANK

Lab Sample ID: 680-167491-2

Date Collected: 04/09/19 00:00

Matrix: Water

Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	567541	04/23/19 23:26	JLK	TAL SAV
	Instrument ID: CMSA2									

Client Sample ID: 32M-01-17XBR_SPR19

Lab Sample ID: 680-167491-7

Date Collected: 04/09/19 08:35

Matrix: Water

Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	567432	04/23/19 18:41	Y1S	TAL SAV
	Instrument ID: CMSO2									
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6010C		1			567186	04/19/19 14:19	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 14:49	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 32M-01-13XBR_SPR19

Lab Sample ID: 680-167491-8

Date Collected: 04/09/19 08:45

Matrix: Water

Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	567541	04/24/19 00:53	JLK	TAL SAV
	Instrument ID: CMSA2									
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6010C		1			567186	04/19/19 15:24	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 15:44	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 32M-01-18XBR_SPR19

Lab Sample ID: 680-167491-9

Date Collected: 04/09/19 10:10

Matrix: Water

Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	5 mL	5 mL	568059	04/27/19 08:12	Y1S	TAL SAV
	Instrument ID: CMSO2									
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6010C		1			567186	04/19/19 15:09	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 15:36	BWR	TAL SAV
	Instrument ID: ICPMSD									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Job ID: 680-167491-2
Project/Site: Fort Devens AOC 32

Client Sample ID: 32M-DUP01_SPR19
Lab Sample ID: 680-167491-10
Date Collected: 04/09/19 10:15
Matrix: Water
Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		20	5 mL	5 mL	567432	04/23/19 18:16	Y1S	TAL SAV
	Instrument ID: CMSO2									
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6010C		1			567186	04/19/19 15:29	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 15:56	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 32M-01-14XOB_SPR19
Lab Sample ID: 680-167491-11
Date Collected: 04/09/19 09:30
Matrix: Water
Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	567541	04/24/19 01:14	JLK	TAL SAV
	Instrument ID: CMSA2									
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6010C		1			567186	04/19/19 15:13	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 15:40	BWR	TAL SAV
	Instrument ID: ICPMSD									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
SM3546-1,2,3,4,5, &6

Matrices: Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 05/02/2019

TEST AMERICA SAVANNAH
LONG TERM MONITORING,
AOC 32/43A SPRING 2019
SM3546

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
LONG TERM MONITORING, AOC 32/43A SPRING 2019
SM3546

Sample Receipt

The following samples were received on April 12, 2019 and were logged in under Katahdin Analytical Services work order number SM3546 for a hardcopy due date of April 30, 2019.

KATAHDIN Sample No.	TEST AMERICA SAVANNAH Sample Identification
SM3546-1	32M-01-13XBR_SPR19
SM3546-2	32M-01-14XOB_SPR19
SM3546-3	32M-01-17XBR_SPR19
SM3546-4	32M-01-18XBR_SPR19
SM3546-5	32M-01-DUP01_SPR19
SM3546-6	32M-TRIP BLANK

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of work order SM3546 were analyzed in accordance with Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample SM3546-3 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as per client request.

MA-VPH Analysis

Samples SM3546-3 and 4 had low recoveries for the surrogate 2,5-dibromotoluene on the PID and the FID which were outside of the DoD QSM acceptance limits. The samples were reanalyzed within hold time and sample SM3546-3RA had a low surrogate recovery on the PID, while sample SM3546-4RA had acceptable surrogate recoveries. The method blank WG251381-1 associated with the reanalyzed samples had low recoveries for the surrogate 2,5-dibromotoluene on the PID and FID. The results for both analyses are reported.

Samples SL3546-4 and 5 each had a peak detected for ethylbenzene because the peaks were within the retention time window. In a previous work order, the client questioned the validity of the peaks that were identified as ethylbenzene for some samples. Historically, ethylbenzene had not been reported at this site. These samples were reanalyzed by GC/MS using SW846 method 8260. The peak that was reported as ethylbenzene by VPH was identified as chlorobenzene. Chlorobenzene is not a target analyte for the VPH method, but it does coelute with ethylbenzene. At the client's request, ethylbenzene was undetected for the affected samples. Based on history, the peaks that were identified as ethylbenzene for samples SL3546-4 and 5 were undetected.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
05.02.19

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client: TA / Koman	KAS PM: [illegible]	Sampled By: Client
Project:	KIMS Entry By: SO	Delivered By: Fedex
KAS Work Order#: 580345-3547	KIMS Review By: [illegible]	Received By: JCB
SDG #:	Cooler: 1 of 2	Date/Time Rec.: 4/12/19 935

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.6
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved?					
Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client:	TA / Koman	KAS PM:	HMM	Sampled By:	Client
Project:		KIMS Entry By:	SO	Delivered By:	Fedex
KAS Work Order#:	SM3545-3547	KIMS Review By:	HMM	Received By:	JCB
SDG #:		Cooler: 2 of 2		Date/Time Rec.:	4/12/19 935

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.8
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved?					
Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040919-AOC32

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments: SM35546

Equipment:

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3* 40mL glass VOA Vials,
4	3* 40mL glass VOA Vials,
9	1* 250mL, plastic,
HIDE	

Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019

Analytical Test Method

	MADEPVP - VPH with targets	SW6010C - Mn	SW6020A - As	SW8260B - VOCs
	4	9	9	29

	Sample ID	Matrix	Date	Time	Samp Init.					Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	32M-01-13XBR_SPR19	WG				X	X	X	X	32M-01-13XBR	N1	0.00	0.00		1
2	32M-01-14XOB_SPR19	WG				X	X	X	X	32M-01-14XOB	N1	17.30	27.30		1
3	32M-01-17XBR_SPR19	WG	4/9/2019	0835	EAS	X	X	X	X	32M-01-17XBR	N1	41.40	51.40	MS/MSD	1
4	32M-01-18XBR_SPR19	WG				X	X	X	X	32M-01-18XBR	N1	0.00	0.00		1
5	32M-DUP01_SPR19	WG				X	X	X	X	32M-01-18XBR	FD1	0.00	0.00		1
6	32M-TRIP BLANK	WQ							X	FIELDQC	TB1	0.00	0.00		1
7															
8															
9															
10															

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	**Date**	**Time**
ES 2L Sims	4/10/2019	1520
	4-11-19	1500

Received by: *(Signature)*	**Date**	**Time**
	4-11-19	1500

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* & condition

4.12.19 935

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040919-AOC32

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments: AOC 32/43A

Equipment: SM3540

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3* 40mL glass VOA Vials,
4	3* 40mL glass VOA Vials,
9	1* 250mL, plastic,
HIDE	

Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init.	MADEPVP - VPH with targets	SW6010C - Mn	SW6020A - As	SW8260B - VOCs	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
						4	9	9	29						
1	~~32M-01-13XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-13XBR~~	~~N1~~	~~0.00~~	~~0.00~~		1
2	32M-01-14XOB_SPR19	WG	4/9/19	0930	BA	X	X	X	X	32M-01-14XOB	N1	17.30	27.30		1
3	~~32M-01-17XBR_SPR19~~	~~WG~~				X	X	X	X	~~32M-01-17XBR~~	~~N1~~	~~41.40~~	~~51.40~~		1
4	~~32M-01-18XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-18XBR~~	~~N1~~	~~0.00~~	~~0.00~~		1
5	~~32M-DUP01_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-18XBR~~	~~FD1~~	~~0.00~~	0.00		1
6	32M-TRIP BLANK	WQ	4/9/19	-	BA				X	FIELDQC	TB1	0.00	0.00		1
7	32M-TripBlank	WQ	4/9/19	-	BA	X				FieldQC	TB1				
8															
9															
10															

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
[signature]	4/10/19	1520	[signature]	4-10-19	1520
[signature]	4-7-19	80			

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

[signature] 4.12.19 935

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040919-AOC32

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments: AOC 32/43A

Equipment: SM3549

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3* 40mL glass VOA Vials,
4	3* 40mL glass VOA Vials,
9	1* 250mL, plastic,
HIDE	

Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019

Analytical Test Method

	Sample ID	Matrix	Date	Time	Samp Init.	MADEPVP - VPH with targets (4)	SW6010C - Mn (9)	SW6020A - As (9)	SW8260B - VOCs (29)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	32M-01-13XBR_SPR19	WG	4/9/19	1345	CV	X	X	X	X	32M-01-13XBR	N1	0.00	0.00		1
2	~~32M-01-14XOB_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-14XOB~~	~~N1~~	~~17.30~~	~~27.30~~		1
3	~~32M-01-17XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	32M-01-17XBR	~~N1~~	~~41.40~~	~~51.40~~		1
4	32M-01-18XBR_SPR19	WG	4/9/19	1010	CV	X	X	X	X	32M-01-18XBR	N1	0.00	0.00		1
5	32M-DUP01_SPR19	WG	4/9/19	1015	CV	X	X	X	X	32M-01-18XBR	FD1	0.00	0.00		1
6	~~32M-TRIP BLANK~~	~~WG~~							X	~~FIELDQC~~	~~TB1~~	~~0.00~~	~~0.00~~		1
7															
8															
9															
10															

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
	4/9/19	1145		4/9/19	1145
	4/10/19	1529		4/10/19	1529
	4-11-19	1100			

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

4.12.19 935

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Apr. 17, 2019
01:34 PM

Login Number: SM3546

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Quote/Incoming:

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.1 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative. VPH undetect ethylbenzene, see work order SL3114.
CHECK NO.	:	
CLIENT PO#	:	680-167491-2
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	
COOLER TEMPERATURE	:	0.6, 0.8
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Long Term Monitoring, AOC 32/43A Spring 2019
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Email PDF, EDD, and invoice to Jerry. No HC.

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SM3546-1	32M-01-13XBR_SPR19	09-APR-19 08:45	12-APR-19			30-APR-19	
SM3546-2	32M-01-14XOB_SPR19	09-APR-19 09:30	12-APR-19			30-APR-19	
SM3546-3	32M-01-17XBR_SPR19	09-APR-19 08:35	12-APR-19			30-APR-19	
SM3546-4	32M-01-18XBR_SPR19	09-APR-19 10:10	12-APR-19			30-APR-19	
SM3546-5	32M-DUP01_SPR19	09-APR-19 10:15	12-APR-19			30-APR-19	
SM3546-6	32M-TRIP BLANK	09-APR-19 00:00	12-APR-19			30-APR-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	23-APR-19	40mL Vial+HCl		
Aqueous	S	MA-VPH	23-APR-19	40mL Vial+HCl		
Aqueous	S	MA-VPH	23-APR-19	40mL Vial+HCl		MS/MSD
Aqueous	S	MA-VPH	23-APR-19	40mL Vial+HCl		
Aqueous	S	MA-VPH	23-APR-19	40mL Vial+HCl		
Aqueous	S	MA-VPH	23-APR-19	40mL Vial+HCl		

Total Samples: **6** ***Total Analyses:*** **6**

HHM 4-17-19

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3546-1
Client ID: 32M-01-13XBR_SPR19
Project: Long Term Monitoring, AOC 32/43A S
SDG: SM3546
Lab File ID: 2MD10143.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		75.9	%					
2,5-Dibromotoluene (PID)		73.5	%					

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3546-2
Client ID: 32M-01-14XOB_SPR19
Project: Long Term Monitoring, AOC 32/43A S
SDG: SM3546
Lab File ID: 2MD10144.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		82.4	%					
2,5-Dibromotoluene (PID)		79.2	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3546-3
Client ID: 32M-01-17XBR_SPR19
Project: Long Term Monitoring, AOC 32/43A S
SDG: SM3546
Lab File ID: 2MD10145.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 19-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 19-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)	*	68.9	%					
2,5-Dibromotoluene (PID)	*	67.1	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3546-3RA
Client ID: 32M-01-17XBR_SPR19
Project: Long Term Monitoring, AOC 32/43A S
SDG: SM3546
Lab File ID: 2MD10190.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 23-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251381

Analysis Date: 23-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		70.0	%					
2,5-Dibromotoluene (PID)	*	67.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3546-4
Client ID: 32M-01-18XBR_SPR19
Project: Long Term Monitoring, AOC 32/43A S
SDG: SM3546
Lab File ID: 2MD10146.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 19-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 19-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics		110	ug/L	1	100	100	50.	75.
C9-C10 Aromatics		160	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)	*	67.7	%					
2,5-Dibromotoluene (PID)	*	66.2	%					

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3546-4RA
Client ID: 32M-01-18XBR_SPR19
Project: Long Term Monitoring, AOC 32/43A S
SDG: SM3546
Lab File ID: 2MD10191.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 23-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251381

Analysis Date: 23-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics		100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics		210	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		85.3	%					
2,5-Dibromotoluene (PID)		86.2	%					

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3546-5
Client ID: 32M-DUP01_SPR19
Project: Long Term Monitoring, AOC 32/43A S
SDG: SM3546
Lab File ID: 2MD10147.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 19-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 19-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics		190	ug/L	1	100	100	50.	75.
C9-C10 Aromatics		230	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		90.9	%					
2,5-Dibromotoluene (PID)		88.4	%					

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Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3546-6
Client ID: 32M-TRIP BLANK
Project: Long Term Monitoring, AOC 32/43A S
SDG: SM3546
Lab File ID: 2MD10137.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		78.9	%					
2,5-Dibromotoluene (PID)		76.3	%					

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http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG251036-1
Client ID: Method Blank Sample
Project:
SDG: SM3546
Lab File ID: 2MD10133.D

Sample Date:
Received Date:
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		86.2	%					
2,5-Dibromotoluene (PID)		84.8	%					

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ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG251381-1
Client ID: Method Blank Sample
Project:
SDG: SM3546
Lab File ID: 2MD10185.D

Sample Date:
Received Date:
Extract Date: 23-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251381

Analysis Date: 23-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)	*	56.6	%					
2,5-Dibromotoluene (PID)	*	54.1	%					

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Long Term Monitoring, AOC 32/43A Spring **Matrix:** AQ
Lab Code: KAS **SDG:** SM3546

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
32M-01-13XBR_SPR19	SM3546-1	B	75.9		73.5	
32M-01-14XOB_SPR19	SM3546-2	B	82.4		79.2	
32M-01-17XBR_SPR19	SM3546-3	B	68.9	*	67.1	*
32M-01-17XBR_SPR19	SM3546-3RA	B	70.0		67.6	*
32M-01-18XBR_SPR19	SM3546-4	B	67.7	*	66.2	*
32M-01-18XBR_SPR19	SM3546-4RA	B	85.3		86.2	
32M-DUP01_SPR19	SM3546-5	B	90.9		88.4	
32M-TRIP BLANK	SM3546-6	B	78.9		76.3	
Method Blank Sample	WG251036-1	B	86.2		84.8	
Laboratory Control S	WG251036-2	B	90.4		90.6	
Laboratory Control S	WG251036-3	B	93.4		93.4	
Matrix Spike	WG251036-6	B	77.8		76.6	
Matrix Spike Duplica	WG251036-7	B	82.1		79.6	
Method Blank Sample	WG251381-1	B	56.6	*	54.1	*
Laboratory Control S	WG251381-2	B	87.0		88.9	
Laboratory Control S	WG251381-3	B	86.1		87.1	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG251036-2
LCSD ID: WG251036-3
Project:
SDG: SM3546
Report Date: 01-MAY-19
LCS File ID: 2MD10134.D

Received Date:
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036
LCSD File ID: 2MD10135.D

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	320.	107.	315.	105.	ug/L	2	25	70-130
C9-C12 Aliphatics	200.	209.	104.	211.	106.	ug/L	1	25	70-130
C9-C10 Aromatics	100.	100.	100.	101.	101.	ug/L	1	25	70-130
Benzene	100.	92.6	92.6	93.8	93.8	ug/L	1	25	70-130
Ethylbenzene	100.	96.2	96.2	97.0	97.0	ug/L	1	25	70-130
Methyl tert-butylether	100.	86.1	86.1	87.2	87.2	ug/L	1	25	70-130
Naphthalene	100.	99.4	99.4	102.	102.	ug/L	2	25	70-130
Toluene	100.	92.7	92.7	93.6	93.6	ug/L	1	25	70-130
m+p-Xylenes	200.	186.	93.0	185.	92.5	ug/L	0	25	70-130
o-Xylene	100.	93.2	93.2	93.6	93.6	ug/L	0	25	70-130
2,5-Dibromotoluene (FID)			90.4		93.4				70-130
2,5-Dibromotoluene (PID)			90.6		93.4				70-130

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LCS/LCSD Recovery Report

LCS ID: WG251381-2
LCSD ID: WG251381-3
Project:
SDG: SM3546
Report Date: 01-MAY-19
LCS File ID: 2MD10186.D

Received Date:
Extract Date: 23-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251381
LCSD File ID: 2MD10187.D

Analysis Date: 23-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	309.	103.	304.	101.	ug/L	2	25	70-130
C9-C12 Aliphatics	200.	210.	105.	204.	102.	ug/L	3	25	70-130
C9-C10 Aromatics	100.	112.	112.	112.	112.	ug/L	0	25	70-130
Benzene	100.	102.	102.	102.	102.	ug/L	0	25	70-130
Ethylbenzene	100.	106.	106.	106.	106.	ug/L	0	25	70-130
Methyl tert-butylether	100.	99.4	99.4	101.	101.	ug/L	2	25	70-130
Naphthalene	100.	116.	116.	117.	117.	ug/L	1	25	70-130
Toluene	100.	102.	102.	102.	102.	ug/L	0	25	70-130
m+p-Xylenes	200.	207.	104.	206.	103.	ug/L	0	25	70-130
o-Xylene	100.	102.	102.	102.	102.	ug/L	0	25	70-130
2,5-Dibromotoluene (FID)			87.0		86.1				70-130
2,5-Dibromotoluene (PID)			88.9		87.1				70-130

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MS/MSD Recovery Report

MS ID: WG251036-6
MSD ID: WG251036-7
Sample ID: SM3546-3
Client ID: 32M-01-17XBR_SPR19
Project:
SDG: SM3546
MS File ID: 2MD10150.D

Received Date:
Extract Date: 19-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036
Report Date: 01-MAY-19
MSD File ID: 2MD10151.D

Analysis Date: 19-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	300.	ug/L	U100	290	301	96.7	100.	4	50	70-130
C9-C12 Aliphatics	200.	200.	ug/L	U100	159	154	79.5	77.0	3	50	70-130
C9-C10 Aromatics	100.	100.	ug/L	U100	87.9	90.2	87.9	90.2	2	50	70-130
Benzene	100.	100.	ug/L	U3.0	83.2	85.4	83.2	85.4	3	50	70-130
Ethylbenzene	100.	100.	ug/L	U5.0	85.8	88.1	85.8	88.1	3	50	70-130
Methyl tert-butylether	100.	100.	ug/L	U5.0	72.8	76.3	72.8	76.3	5	50	70-130
Naphthalene	100.	100.	ug/L	U5.0	87.6	89.9	87.6	89.9	2	50	70-130
Toluene	100.	100.	ug/L	U5.0	82.9	85.2	82.9	85.2	3	50	70-130
m+p-Xylenes	200.	200.	ug/L	U10	168	173	84.0	86.5	3	50	70-130
o-Xylene	100.	100.	ug/L	U5.0	81.9	84.1	81.9	84.1	3	50	70-130
2,5-Dibromotoluene (FID)							77.8	82.1			70-130
2,5-Dibromotoluene (PID)							76.6	79.6			70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, AOC 32/43A Spring
Lab File ID : 2MD10133.D
Instrument ID : GC02

SDG : SM3546
Lab Sample ID : WG251036-1
Date Analyzed : 18-APR-19
Time Analyzed : 11:20
Date Extracted : 18-APR-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG251036-2	2MD10134	04/18/19	12:01
Laboratory Control S	WG251036-3	2MD10135	04/18/19	12:43
32M-TRIP BLANK	SM3546-6	2MD10137	04/18/19	18:56
32M-01-13XBR_SPR19	SM3546-1	2MD10143	04/18/19	23:14
32M-01-14XOB_SPR19	SM3546-2	2MD10144	04/18/19	23:58
32M-01-17XBR_SPR19	SM3546-3	2MD10145	04/19/19	00:42
32M-01-18XBR_SPR19	SM3546-4	2MD10146	04/19/19	01:25
32M-DUP01_SPR19	SM3546-5	2MD10147	04/19/19	02:08
Matrix Spike	WG251036-6	2MD10150	04/19/19	04:18
Matrix Spike Duplica	WG251036-7	2MD10151	04/19/19	05:01

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, AOC 32/43A Spring
Lab File ID : 2MD10185.D
Instrument ID : GC02

SDG : SM3546
Lab Sample ID : WG251381-1
Date Analyzed : 23-APR-19
Time Analyzed : 17:35
Date Extracted : 23-APR-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG251381-2	2MD10186	04/23/19	18:18
Laboratory Control S	WG251381-3	2MD10187	04/23/19	19:01
32M-01-17XBR_SPR19	SM3546-3RA	2MD10190	04/23/19	21:11
32M-01-18XBR_SPR19	SM3546-4RA	2MD10191	04/23/19	21:55

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SM3546
Project : Long Term Monitoring, AOC 32/43A Spring **Instrument ID:** GC02
Lab File IDs : 2MC10003.D2MC10004.D2MC10005.D **Calibration Date(s):** 01-MAR-19 16:33
2MC10002.D2MC10006.D2MC10007.D 01-MAR-19 20:00

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	3318	3648	3784	3864	3924	3218	AVG		3626		8.10893	25.00000	M (
Methyl tert-butylether	1923	2203	2239	2133	2200	2070	AVG		2128		5.50141	25.00000	O
Benzene	4620	4693	4725	4612	4707	4180	AVG		4590		4.48437	25.00000	O
Toluene	4164	4256	4316	4231	4282	3630	AVG		4146		6.23122	25.00000	O
Ethylbenzene	3398	3578	3696	3696	3739	3156	AVG		3544		6.40148	25.00000	O
m+p-Xylene	4302	4365	4434	4325	4134	3023	AVG		4097		13.06595	25.00000	O
o-Xylene	3606	3743	3806	3748	3765	3248	AVG		3653		5.72936	25.00000	O
1,2,4-trimethylbenzene	3318	3648	3784	3864	3924	3218	AVG		3626		8.10893	25.00000	O
Naphthalene	3229	3716	3889	3980	4200	3326	AVG		3723		10.20792	25.00000	O
2,5-Dibromotoluene (PID)	3256	2996	2973	3072	3380	2850	AVG		3088		6.34165	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SM3546
Project : Long Term Monitoring, AOC 32/43A Spring **Instrument ID:** GC02
Lab File IDs : 2MC10003.D2MC10004.D2MC10005.D **Calibration Date(s):** 01-MAR-19 16:33
2MC10002.D2MC10006.D2MC10007.D 01-MAR-19 20:00

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5643	5654	5586	5684	5646	5772	AVG		5664		1.09159	25.00000	M (
C9-C12 Aliphatic	6057	5084	5038	5362	5856	6544	AVG		5657		10.56152	25.00000	M (
n-Pentane	4868	4997	4878	5013	4970	5057	AVG		4964		1.52613	25.00000	O
2-Methylpentane	5610	5740	5632	5720	5692	5758	AVG		5692		1.04754	25.00000	O
Methyl tert-butylether	4025	4468	4339	4187	4312	4172	AVG		4250		3.64060	25.00000	O
2,2,4-Trimethylpentane	6450	6224	6247	6319	6278	6503	AVG		6337		1.79748	25.00000	O
Benzene	7684	7751	7811	7700	7878	7851	AVG		7779		1.02984	25.00000	O
Toluene	7327	7593	7681	7656	7807	7772	AVG		7639		2.24818	25.00000	O
n-Nonane	5734	5221	5212	5531	5663	6365	AVG		5621		7.56430	25.00000	O
n-Decane	5382	4391	4442	5061	5880	6511	AVG		5278		15.68496	25.00000	O
Ethylbenzene	6829	7053	7315	7382	7563	7555	AVG		7283		3.98978	25.00000	O
m+p-Xylene	7287	7489	7572	7590	7713	7692	AVG		7557		2.06388	25.00000	O
o-Xylene	7272	7599	7695	7670	7842	7751	AVG		7638		2.57919	25.00000	O
1,2,4-trimethylbenzene	6386	6879	7128	7352	7576	7538	AVG		7143		6.35566	25.00000	O
n-Butylcyclohexane	6732	5777	5634	5664	5831	6577	AVG		6036		8.07019	25.00000	O
Naphthalene	4883	5062	5317	5556	5927	5945	AVG		5448		8.09890	25.00000	O
2,5-Dibromotoluene (FID)	2499	1999	1947	2053	2380	2558	AVG		2239		12.09467	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SM3546
Project : Long Term Monitoring, AOC 32/43A Spring **Instrument ID:** GC02
Lab File IDs : 2MD10179.D 2MD10180.D 2MD10181.D **Calibration Date(s):** 23-APR-19 09:54
2MD10178.D 2MD10182.D 2MD10183.D 23-APR-19 14:07

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Crv					Max	
	1.0000	5.0000	10.0000	50.0000	100.0000	300.0000	New	b	m1	m2	%RSD	%RSD	
C9-C10 Aromatic	2721	3107	3241	3390	3487	2789	AVG		3122		10.0383	25.00000	M
Methyl tert-butylether	1708	1930	1931	1849	1881	1755	AVG		1842		5.02027	25.00000	O
Benzene	4065	4149	4171	4049	4120	3683	AVG		4040		4.47508	25.00000	O
Toluene	3647	3765	3824	3730	3767	3209	AVG		3657		6.20929	25.00000	O
Ethylbenzene	2849	3133	3214	3242	3288	2766	AVG		3082		7.14210	25.00000	O
m+p-Xylene	3708	3863	3971	3833	3783	2639	AVG		3633		13.6196	25.00000	O
o-Xylene	3125	3310	3408	3312	3340	2822	AVG		3219		6.70954	25.00000	O
1,2,4-trimethylbenzene	2721	3107	3241	3390	3487	2789	AVG		3122		10.0383	25.00000	O
Naphthalene	2112	3097	3095	3455	3755	2940	AVG		3076		18.1198	25.00000	O
2,5-Dibromotoluene (PID)	983	11130	15591	119622	312052	726390	QUA	4.77468	0.00026	1.951e-01	0.99728	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SM3546
Project : Long Term Monitoring, AOC 32/43A Spring **Instrument ID:** GC02
Lab File IDs : 2MD10179.D2MD10180.D2MD10181.D **Calibration Date(s):** 23-APR-19 09:54
2MD10178.D2MD10182.D2MD10183.D 23-APR-19 14:07

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5870	5526	5477	5693	5725	5470	AVG		5627		2.86752	25.00000	M (
C9-C12 Aliphatic	5786	5170	5170	5379	5945	6071	AVG		5587		7.12927	25.00000	M (
n-Pentane	5122	4765	4699	5007	5064	4813	AVG		4911		3.56414	25.00000	O
2-Methylpentane	5797	5542	5548	5738	5717	5456	AVG		5633		2.40710	25.00000	O
Methyl tert-butylether	4190	4219	4236	4141	4107	3875	AVG		4128		3.22669	25.00000	O
2,2,4-Trimethylpentane	6691	6273	6185	6333	6394	6141	AVG		6336		3.10919	25.00000	O
Benzene	7719	7608	7622	7531	7586	7227	AVG		7549		2.23943	25.00000	O
Toluene	7414	7489	7584	7484	7532	7193	AVG		7449		1.84530	25.00000	O
n-Nonane	5494	5107	5146	5583	5832	5991	AVG		5525		6.44291	25.00000	O
n-Decane	4853	4138	4364	5037	5889	6003	AVG		5047		15.22975	25.00000	O
Ethylbenzene	6336	6845	7013	7208	7281	6997	AVG		6947		4.86194	25.00000	O
m+p-Xylene	6959	7230	7466	7432	7467	7157	AVG		7285		2.83719	25.00000	O
o-Xylene	6886	7396	7518	7501	7541	7173	AVG		7336		3.52650	25.00000	O
1,2,4-trimethylbenzene	5905	6507	6744	7133	7369	6978	AVG		6773		7.67717	25.00000	O
n-Butylcyclohexane	6717	6201	5975	5722	6000	6139	AVG		6126		5.44707	25.00000	O
Naphthalene	3382	4618	4612	5315	5790	5487	AVG		4867		17.83826	25.00000	O
2,5-Dibromotoluene (FID)	1040	7507	10107	87111	235063	682034	QUA	4.34692	0.00042	1.729e-01	0.99821	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, AOC 32
Lab ID : WG251036-8
Lab File ID : 2MD10132.D
Initial Calibration Date(s): 03/01/19 16:33 03/01/19 20:00

SDG: SM3546
Analytical Date: 04/18/19 09:50
Instrument ID: GC02
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	Benzene	4590	4154	0.100	-9.49268	25.00000	Averaged
30	Ethylbenzene	3544	3308	0.100	-6.66830	25.00000	Averaged
40	Methyl tert-butylether	2128	1906	0.100	-10.42491	25.00000	Averaged
50	Naphthalene	3723	3729	0.100	0.16670	25.00000	Averaged
60	Toluene	4146	3794	0.100	-8.49810	25.00000	Averaged
70	m+p-Xylene	4097	3870	0.100	-5.55277	25.00000	Averaged
80	o-Xylene	3653	3352	0.100	-8.22666	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	3088	3305	0.100	7.03899	25.00000	Averaged
180	1,2,4-trimethylbenzene	3626	3490	0.100	-3.74201	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, AOC 32
Lab ID : WG251036-8
Lab File ID : 2MD10132.D
Initial Calibration Date(s): 03/01/19 16:33 03/01/19 20:00

SDG: SM3546
Analytical Date: 04/18/19 09:50
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
60	Benzene	7779	7475	0.100	-3.91146	25.00000	Averaged
70	Ethylbenzene	7283	7108	0.100	-2.40175	25.00000	Averaged
80	Methyl tert-butylether	4250	4098	0.100	-3.58415	25.00000	Averaged
90	Naphthalene	5448	5587	0.100	2.55442	25.00000	Averaged
100	Toluene	7639	7381	0.100	-3.37917	25.00000	Averaged
110	m+p-Xylene	7557	7279	0.100	-3.67884	25.00000	Averaged
120	o-Xylene	7638	7354	0.100	-3.71602	25.00000	Averaged
200	n-Pentane	4964	4934	0.100	-0.60780	25.00000	Averaged
210	2-Methylpentane	5692	5568	0.100	-2.17658	25.00000	Averaged
220	2,2,4-Trimethylpentane	6337	6097	0.100	-3.78405	25.00000	Averaged
230	n-Nonane	5621	5253	0.100	-6.54117	30.00000	Averaged
240	n-Decane	5278	4738	0.100	-10.23075	25.00000	Averaged
250	n-Butylcyclohexane	6036	5442	0.100	-9.83289	25.00000	Averaged
260	1,2,4-trimethylbenzene	7143	7142	0.100	-0.01308	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	2239	2349	0.100	4.89116	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, AOC 32
Lab ID : WG251036-9
Lab File ID : 2MD10152.D
Initial Calibration Date(s): 03/01/19 16:33 03/01/19 20:00

SDG: SM3546
Analytical Date: 04/19/19 05:45
Instrument ID: GC02
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	Benzene	4590	4204	0.100	-8.40194	25.00000	Averaged
30	Ethylbenzene	3544	3317	0.100	-6.40870	25.00000	Averaged
40	Methyl tert-butylether	2128	1787	0.100	-16.03493	25.00000	Averaged
50	Naphthalene	3723	3705	0.100	-0.49187	25.00000	Averaged
60	Toluene	4146	3849	0.100	-7.16200	25.00000	Averaged
70	m+p-Xylene	4097	3903	0.100	-4.74855	25.00000	Averaged
80	o-Xylene	3653	3379	0.100	-7.48800	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	3088	2598	0.100	-15.86634	25.00000	Averaged
180	1,2,4-trimethylbenzene	3626	3459	0.100	-4.59200	25.00000	Averaged

*** = Compound out of QC criteria**

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, AOC 32
Lab ID : WG251036-9
Lab File ID : 2MD10152.D
Initial Calibration Date(s): 03/01/19 16:33 03/01/19 20:00

SDG: SM3546
Analytical Date: 04/19/19 05:45
Instrument ID: GC02
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
60	Benzene	7779	7674	0.100	-1.35178	25.00000	Averaged
70	Ethylbenzene	7283	7268	0.100	-0.19655	25.00000	Averaged
80	Methyl tert-butylether	4250	4029	0.100	-5.22067	25.00000	Averaged
90	Naphthalene	5448	5672	0.100	4.10573	25.00000	Averaged
100	Toluene	7639	7611	0.100	-0.36713	25.00000	Averaged
110	m+p-Xylene	7557	7476	0.100	-1.07546	25.00000	Averaged
120	o-Xylene	7638	7552	0.100	-1.13371	25.00000	Averaged
200	n-Pentane	4964	4654	0.100	-6.23064	25.00000	Averaged
210	2-Methylpentane	5692	5261	0.100	-7.56593	25.00000	Averaged
220	2,2,4-Trimethylpentane	6337	5717	0.100	-9.77865	25.00000	Averaged
230	n-Nonane	5621	4577	0.100	-18.58030	30.00000	Averaged
240	n-Decane	5278	4209	0.100	-20.24671	25.00000	Averaged
250	n-Butylcyclohexane	6036	4869	0.100	-19.33004	25.00000	Averaged
260	1,2,4-trimethylbenzene	7143	7215	0.100	1.01000	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	2239	1876	0.100	-16.21711	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, AOC 32/43A Spring
Lab ID : WG251381-4
Lab File ID : 2MD10192.D
Initial Calibration Date(s): 04/23/19 09:54 04/23/19 14:07

SDG: SM3546
Analytical Date: 04/23/19 22:39
Instrument ID: GC02
Column ID: A

Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2 Methyl tert-butylether	1842	1933	1933	0.100	4.92370	25.00000	Averaged
3 Benzene	4040	4186	4186	0.100	3.61347	25.00000	Averaged
4 Toluene	3657	3849	3849	0.100	5.23843	25.00000	Averaged
5 Ethylbenzene	3082	3336	3336	0.100	8.23966	25.00000	Averaged
6 m+p-Xylene	3633	3928	3928	0.100	8.13278	25.00000	Averaged
7 o-Xylene	3219	3416	3416	0.100	6.09700	25.00000	Averaged
8 1,2,4-trimethylbenzene	3122	3485	3485	0.100	11.62430	25.00000	Averaged
10 Naphthalene	3076	3655	3655	0.100	18.85253	25.00000	Averaged
11 2,5-Dibromotoluene (PID)	50.00000	39.95738	2448	0.100	-20.08523	25.00000	Quadratic

*** = Compound out of QC criteria**

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, AOC 32/43A Spring
SDG: SM3546
Lab ID : WG251381-4
Analytical Date: 04/23/19 22:39
Lab File ID : 2MD10192.D
Instrument ID: GC02
Initial Calibration Date(s): 04/23/19 09:54 04/23/19 14:07
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4911	4602	4602	0.100	-6.29625	25.00000	Averaged
6	2-Methylpentane	5633	5291	5291	0.100	-6.07802	25.00000	Averaged
7	Methyl tert-butylether	4128	4282	4282	0.100	3.72168	25.00000	Averaged
8	2,2,4-Trimethylpentane	6336	5870	5870	0.100	-7.35189	25.00000	Averaged
9	Benzene	7549	7676	7676	0.100	1.68858	25.00000	Averaged
11	Toluene	7449	7649	7649	0.100	2.68094	25.00000	Averaged
12	n-Nonane	5525	4966	4966	0.100	-10.13195	30.00000	Averaged
13	n-Decane	5047	4401	4401	0.100	-12.80608	25.00000	Averaged
14	Ethylbenzene	6947	7305	7305	0.100	5.16028	25.00000	Averaged
15	m+p-Xylene	7285	7566	7566	0.100	3.84983	25.00000	Averaged
16	o-Xylene	7336	7655	7655	0.100	4.35899	25.00000	Averaged
18	1,2,4-trimethylbenzene	6773	7277	7277	0.100	7.44435	25.00000	Averaged
19	n-Butylcyclohexane	6126	5172	5172	0.100	-15.57157	25.00000	Averaged
20	Naphthalene	4867	5574	5574	0.100	14.51189	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	50.00000	42.11346	1787	0.100	-15.77309	25.00000	Quadratic

*** = Compound out of QC criteria**

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Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services **SDG :** SM3546
Project : Long Term Monitoring, AOC 32/43A Spring
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG247799-4	03/01/19	16:33		31.294
Initial Calibration	WG247799-4	03/01/19	16:33	31.284	
Initial Calibration	WG247799-1	03/01/19	17:15		31.292
Initial Calibration	WG247799-1	03/01/19	17:15	31.282	
Initial Calibration	WG247799-2	03/01/19	17:56		31.292
Initial Calibration	WG247799-2	03/01/19	17:56	31.282	
Initial Calibration	WG247799-3	03/01/19	18:37		31.294
Initial Calibration	WG247799-3	03/01/19	18:37	31.284	
Initial Calibration	WG247799-5	03/01/19	19:19		31.291
Initial Calibration	WG247799-5	03/01/19	19:19	31.283	
Initial Calibration	WG247799-6	03/01/19	20:00		31.296
Initial Calibration	WG247799-6	03/01/19	20:00	31.286	
Independent Source	WG247799-7	03/01/19	20:41	31.283	31.293
Continuing Calibrati	WG251036-8	04/18/19	09:50	31.284	31.294
Method Blank Sample	WG251036-1	04/18/19	11:20	31.286	31.296
Laboratory Control S	WG251036-2	04/18/19	12:01	31.287	31.296
Laboratory Control S	WG251036-3	04/18/19	12:43	31.282	31.291
32M-TRIP BLANK	SM3546-6	04/18/19	18:56	31.297	31.308
32M-01-13XBR_SPR19	SM3546-1	04/18/19	23:14	31.301	31.312
32M-01-14XOB_SPR19	SM3546-2	04/18/19	23:58	31.304	31.314
32M-01-17XBR_SPR19	SM3546-3	04/19/19	00:42	31.305	31.315
32M-01-18XBR_SPR19	SM3546-4	04/19/19	01:25	31.305	31.315
32M-DUP01_SPR19	SM3546-5	04/19/19	02:08	31.307	31.317
Matrix Spike	WG251036-6	04/19/19	04:18	31.308	31.318
Matrix Spike Duplica	WG251036-7	04/19/19	05:01	31.308	31.318
Continuing Calibrati	WG251036-9	04/19/19	05:45	31.305	31.316
Initial Calibration	WG251714-4	04/23/19	09:54		31.306
Initial Calibration	WG251714-4	04/23/19	09:54	31.296	
Initial Calibration	WG251714-1	04/23/19	10:35		31.303
Initial Calibration	WG251714-1	04/23/19	10:35	31.293	
Initial Calibration	WG251714-2	04/23/19	11:17		31.304
Initial Calibration	WG251714-2	04/23/19	11:17	31.293	
Initial Calibration	WG251714-3	04/23/19	11:59		31.302
Initial Calibration	WG251714-3	04/23/19	11:59	31.292	
Initial Calibration	WG251714-5	04/23/19	13:26		31.303
Initial Calibration	WG251714-5	04/23/19	13:26	31.294	

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Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services **SDG :** SM3546
Project : Long Term Monitoring, AOC 32/43A Spring
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG251714-6	04/23/19	14:07		31.305
Initial Calibration	WG251714-6	04/23/19	14:07	31.294	
Independent Source	WG251714-7	04/23/19	16:53	31.298	31.308
Method Blank Sample	WG251381-1	04/23/19	17:35	31.297	31.308
Laboratory Control S	WG251381-2	04/23/19	18:18	31.306	31.316
Laboratory Control S	WG251381-3	04/23/19	19:01	31.3	31.31
32M-01-17XBR_SPR19	SM3546-3RA	04/23/19	21:11	31.301	31.311
32M-01-18XBR_SPR19	SM3546-4RA	04/23/19	21:55	31.304	31.314
Continuing Calibrati	WG251381-4	04/23/19	22:39	31.303	31.313

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CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040919-AOC32 360325-Boston

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3* 40mL glass VOA Vials,
4	3* 40mL glass VOA Vials,
9	1* 250mL, plastic,
HIDE	

	Analytical Test Method	MADEPVP - VPH with targets	SW6010C - Mn	SW6020A - As	SW8260B - VOCs
Event. KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019		4	9	9	29

	Sample ID	Matrix	Date	Time	Samp Init.	MADEPVP - VPH with targets	SW6010C - Mn	SW6020A - As	SW8260B - VOCs	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	32M-01-13XBR_SPR19	WG				X	X	X	X	32M-01-13XBR	N1	0.00	0.00		1
2	32M-01-14XOB_SPR19	WG				X	X	X	X	32M-01-14XOB	N1	17.30	27.30		1
3	32M-01-17XBR_SPR19	WG	4/9/2019	0835	EAS	X	X	X	X	32M-01-17XBR	N1	41.40	51.40	MS/MSD	1
4	32M-01-18XBR_SPR19	WG				X	X	X	X	32M-01-18XBR	N1	0.00	0.00		1
5	32M-DUP01_SPR19	WG				X	X	X	X	32M-01-18XBR	FD1	0.00	0.00		1
6	32M-TRIP BLANK	WQ							X	FIELDQC	TB1	0.00	0.00		1
7															
8															
9															
10															
		Turnaround Time: 21 Days													

Relinquished by: *(Signature)*	Date	Time
Erik Sirius	4/10/2019	1520
[signature]	4-11-19	1800

Received by: *(Signature)*	Date	Time
[signature]	4-11-19	1520
03/2.5(CF) 04/2.6°		

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

[signature] Banda 04-12-19 1027

Page 1 of 1

5/18/2019

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KOMAN Government Services, LLC
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COC # 040919-AOC32

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments: AOC 32/43A

Equipment:

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3* 40mL glass VOA Vials,
4	3* 40mL glass VOA Vials,
9	1* 250mL, plastic,
HIDE	

Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019

Analytical Test Method

	Sample ID	Matrix	Date	Time	Samp Init.	MADEPVP - VPH with targets (4)	SW6010C - Mn (9)	SW6020A - As (9)	SW8260B - VOCs (29)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	32M-01-13XBR_SPR19	WG	4/9/19	0845	CN	X	X	X	X	32M-01-13XBR	N1	0.00	0.00		1
2	~~32M-01-14XOB_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-14XOB~~	~~N1~~	~~17.30~~	~~27.30~~		1
3	~~32M-01-17XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-17XBR~~	~~N1~~	~~41.40~~	~~51.40~~		1
4	32M-01-18XBR_SPR19	WG	4/9/19	1010	CN	X	X	X	X	32M-01-18XBR	N1	0.00	0.00		1
5	32M-DUP01_SPR19	WG	4/9/19	1015	CN	X	X	X	X	32M-01-18XBR	FD1	0.00	0.00		1
6	~~32M-TRIP BLANK~~	~~WQ~~							X	~~FIELDQC~~	~~TB1~~	~~0.00~~	~~0.00~~		1
7															
8															
9															
10															

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	Date	Time
	4/9/19	1145
	4/10/19	1520
	4-11-19	1100

Received by: *(Signature)*	Date	Time
	4/9/19	1145
	4-10-19	1520
0.3/25(C)04/2.6C		

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

04-19 1027

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
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(508) 508.366.7442, lekes@komangs.com

COC # 040919-AOC32

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:
AOC 32/43A

Equipment:

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3" 40mL glass VOA Vials,
4	3" 40mL glass VOA Vials,
9	1" 250mL, plastic,
HIDE	

Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init.	MADEPVP - VPH with targets	SW6010C - Mn	SW6020A - As	SW8260B - VOCs	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
					Analytical Test Method	4	9	9	29						
1	~~32M-01-13XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-13XBR~~	~~N1~~	~~0.00~~	~~0.00~~		1
2	32M-01-14XOB_SPR19	WG	4/9/19	0930	BrA	X	X	X	X	32M-01-14XOB	N1	17.30	27.30		1
3	~~32M-01-17XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-17XBR~~	~~N1~~	~~41.40~~	~~51.40~~		1
4	~~32M-01-18XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-18XBR~~	~~N1~~	~~0.00~~	~~0.00~~		1
5	~~32M-DUP01_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-18XBR~~	~~FD1~~	~~0.00~~	~~0.00~~		1
6	32M-TRIP BLANK	WQ	4/9/19	–	BrA				X	FIELDQC	TB1	0.00	0.00		1
7	32M-TripBlank	WQ	4/9/19	–	BrA	X				FieldQC	TB1				
8															
9															
10															

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
[signature]	4/10/19	1520	[signature]	4-10-19	1500
[signature]	4-7-19	180			
			0.3/2.5(CF)0.4/2.6°		

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

[signature] 04-12-19 1027

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040919-AOC32

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments: SM35416

Equipment:

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3* 40mL glass VOA Vials,
4	3* 40mL glass VOA Vials,
9	1* 250mL, plastic,
HIDE	

Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019

Analytical Test Method

		MADEP VP - VPH with targets	SW6010C - Mn	SW6020A - As	SW8260B - VOCs							
		4	9	9	29							
	Sample ID	Matrix	Date	Time	Samp Init.					Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	32M-01-13XBR_SPR19	WG				X	X	X	X	32M-01-13XBR	N1	0.00	0.00		1
2	32M-01-14XOB_SPR19	WG				X	X	X	X	32M-01-14XOB	N1	17.30	27.30		1
3	32M-01-17XBR_SPR19	WG	4/9/2019	0835	EAS	X	X	X	X	32M-01-17XBR	N1	41.40	51.40	MS/MSD	1
4	32M-01-18XBR_SPR19	WG				X	X	X	X	32M-01-18XBR	N1	0.00	0.00		1
5	32M-DUP01_SPR19	WG				X	X	X	X	32M-01-18XBR	FD1	0.00	0.00		1
6	32M-TRIP BLANK	WQ							X	FIELDQC	TB1	0.00	0.00		1
7															
8															
9															
10															
		Turnaround Time: 21 Days													

Relinquished by: *(Signature)*	Date	Time
[signature]	4/10/2019	1530
[signature]	4-11-19	1300

Received by: *(Signature)*	Date	Time
[signature]	4-11-19	1530

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

[signature] 4.12.19 935

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040919-AOC32

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:
AOC 32/43A

Equipment:
SM3546

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3* 40mL glass VOA Vials,
4	3* 40mL glass VOA Vials,
9	1* 250mL, plastic,
HIDE	

Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init.	MADEPVP - VPH with targets	SW6010C - Mn	SW6020A - As	SW8260B - VOCs	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
						4	9	9	29						
1	~~32M-01-13XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-13XBR~~	~~N1~~	~~0.00~~	~~0.00~~		1
2	32M-01-14XOB_SPR19	WG	4/9/19	0930	B/A	X	X	X	X	32M-01-14XOB	N1	17.30	27.30		1
3	~~32M-01-17XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-17XBR~~	~~N1~~	~~41.40~~	~~51.40~~		1
4	~~32M-01-18XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-18XBR~~	~~N1~~	~~0.00~~	~~0.00~~		1
5	~~32M-DUP01_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-18XBR~~	~~FD1~~	~~0.00~~	~~0.00~~		1
6	32M-TRIP BLANK	WQ	4/9/19	-	B/A				X	FIELDQC	TB1	0.00	0.00		1
7	32M-TripBlank	WQ	4/9/19	-	B/A	X				FieldQC	TB1				
8															
9															
10															

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	Date	Time
[signature]	4/10/19	1520
[signature]	4-7-19	1520

Received by: *(Signature)*	Date	Time
[signature]	4-10-19	1520

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

[signature] 4.12.19 935

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040919-AOC32

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments: AOC 32/43A

Equipment: SM3549

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3* 40mL glass VOA Vials,
4	3* 40mL glass VOA Vials,
9	1* 250mL, plastic,
HIDE	

Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019

Analytical Test Method

	Sample ID	Matrix	Date	Time	Samp Init.	MADEPVP - VPH with targets (4)	SW6010C - Mn (9)	SW6020A - As (9)	SW8260B - VOCs (29)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	32M-01-13XBR_SPR19	WG	4/9/19	0545	CV	X	X	X	X	32M-01-13XBR	N1	0.00	0.00		1
2	~~32M-01-14XOB_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-14XOB~~	~~N1~~	~~17.30~~	~~27.30~~		1
3	~~32M-01-17XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-17XBR~~	~~N1~~	~~41.40~~	~~51.40~~		1
4	32M-01-18XBR_SPR19	WG	4/9/19	1010	CV	X	X	X	X	32M-01-18XBR	N1	0.00	0.00		1
5	32M-DUP01_SPR19	WG	4/9/19	1015	CV	X	X	X	X	32M-01-18XBR	FD1	0.00	0.00		1
6	~~32M-TRIP BLANK~~	~~WQ~~							X	FIELDQC	TB1	0.00	0.00		1
7															
8															
9															
10															

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	Date	Time
	4/9/19	1145
	4/10/19	1523
	4-11-19	1100

Received by: *(Signature)*	Date	Time
	4/9/19	1145
	4-10-19	1536

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

4.12.19 935

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client:	TA / Koman	KAS PM:	HNM	Sampled By:	Client
Project:		KIMS Entry By:	SO	Delivered By:	Fedex
KAS Work Order#:	580545-3597	KIMS Review By:	HNM	Received By:	JCB
SDG #:		Cooler: 1 of 2		Date/Time Rec.:	4.12.19 935

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.6
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment: Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client:	TA / Koman	KAS PM:	HHM	Sampled By:	Client
Project:		KIMS Entry By:	SO	Delivered By:	Fedex
KAS Work Order#:	SM3545-3547	KIMS Review By:	HHM	Received By:	JCB
SDG #:		Cooler: 2 of 2		Date/Time Rec.:	4-12-19 935

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.8
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment: Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-167491-2

Login Number: 167491

List Source: Eurofins TestAmerica, Savannah

List Number: 1

Creator: Banda, Christy S

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-167491-2
Project/Site: Fort Devens AOC 32

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-19 *
Alaska	State Program	10		06-30-19 *
Alaska (UST)	State Program	10	UST-104	09-22-19
ANAB	DoD		L2463	09-22-19
ANAB	ISO/IEC 17025		L2463.01	09-22-19
Arizona	State Program	9	AZ0808	12-14-19
Arkansas DEQ	State Program	6	88-0692	02-01-20
California	State Program	9	2939	06-30-19 *
Colorado	State Program	8	N/A	12-31-19
Connecticut	State Program	1	PH-0161	03-31-21
Florida	NELAP	4	E87052	06-30-19 *
GA Dept. of Agriculture	State Program	4	N/A	06-12-19
Georgia	State Program	4	N/A	06-30-19 *
Georgia	State Program	4	803	06-30-19 *
Guam	State Program	9	15-005r	04-17-20
Hawaii	State Program	9	N/A	06-30-19
Illinois	NELAP	5	200022	11-30-19
Indiana	State Program	5	N/A	06-30-19 *
Iowa	State Program	7	353	06-30-19 *
Kentucky (DW)	State Program	4	90084	12-31-19
Kentucky (UST)	State Program	4	18	06-30-19
Kentucky (WW)	State Program	4	90084	12-31-19
Louisiana	NELAP	6	30690	06-30-19
Louisiana (DW)	NELAP	6	LA160019	12-31-19
Maine	State Program	1	GA00006	09-25-20
Maryland	State Program	3	250	12-31-19
Massachusetts	State Program	1	M-GA006	06-30-19
Michigan	State Program	5	9925	03-05-19 *
Mississippi	State Program	4	N/A	06-30-19 *
Nebraska	State Program	7	TestAmerica-Savannah	06-30-19
New Jersey	NELAP	2	GA769	06-30-19 *
New Mexico	State Program	6	N/A	06-30-19
New York	NELAP	2	10842	04-01-20
North Carolina (DW)	State Program	4	13701	07-31-19
North Carolina (WW/SW)	State Program	4	269	12-31-19
Oklahoma	State Program	6	9984	08-31-19
Pennsylvania	NELAP	3	68-00474	06-30-19 *
Puerto Rico	State Program	2	GA00006	01-01-20
South Carolina	State Program	4	98001	06-30-19 *
Tennessee	State Program	4	TN02961	06-30-19 *
Texas	NELAP	6	T104704185-16-9	11-30-19
Texas (DW)	State Program	1	T104704185	06-30-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
Virginia	NELAP	3	460161	06-14-19 *
Washington	State Program	10	C805	06-10-19 *
West Virginia (DW)	State Program	3	9950C	12-31-19
West Virginia DEP	State Program	3	094	06-30-19 *
Wisconsin	State Program	5	999819810	08-31-19
Wyoming	State Program	8	8TMS-L	06-30-16 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-167230-1
Client Project/Site: LTM, AOC 57 Spring 2019

For:
KOMAN Government Solutions, LLC
293 Boston Post Road
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Jerry Lanier

Authorized for release by:
4/23/2019 2:29:43 PM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

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Visit us at: www.testamericainc.com

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

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

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

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Table of Contents 2
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Receipt Checklists 12
Certification Summary 13

Job ID: 680-167230-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: LTM, AOC 57 Spring 2019

Report Number: 680-167230-1

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 the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 04/09/2019; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.4 C.

METALS (ICP) - DISSOLVED

Samples 57-SW1_SPR19 (680-167230-1) and 57-SWDUP_SPR19 (680-167230-2) were analyzed for Metals (ICP) - Dissolved in accordance with EPA SW-846 Method 6010C. The samples were prepared on 04/14/2019 and analyzed on 04/16/2019.

Iron was detected in method blank MB 680-566278/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

METALS (ICPMS) - DISSOLVED

Samples 57-SW1_SPR19 (680-167230-1) and 57-SWDUP_SPR19 (680-167230-2) were analyzed for Metals (ICPMS) - Dissolved in accordance with EPA SW-846 Method 6020A. The samples were prepared on 04/14/2019 and analyzed on 04/15/2019.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM, AOC 57 Spring 2019

Job ID: 680-167230-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-167230-1	57-SW1_SPR19	Water	04/05/19 12:50	04/09/19 09:13
680-167230-2	57-SWDUP_SPR19	Water	04/05/19 12:55	04/09/19 09:13

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM, AOC 57 Spring 2019

Job ID: 680-167230-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL SAV

Protocol References:

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

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Definitions/Glossary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM, AOC 57 Spring 2019

Job ID: 680-167230-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

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

Client Sample Results

Client: KOMAN Government Solutions, LLC
Project/Site: LTM, AOC 57 Spring 2019

Job ID: 680-167230-1

Client Sample ID: 57-SW1_SPR19

Lab Sample ID: 680-167230-1

Date Collected: 04/05/19 12:50

Matrix: Water

Date Received: 04/09/19 09:13

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	760		50	50	17	ug/L		04/16/19 02:05	1
Manganese	110		10	3.0	1.0	ug/L		04/16/19 02:05	1

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/15/19 13:44	1

Client Sample ID: 57-SWDUP_SPR19

Lab Sample ID: 680-167230-2

Date Collected: 04/05/19 12:55

Matrix: Water

Date Received: 04/09/19 09:13

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	600		50	50	17	ug/L		04/16/19 02:09	1
Manganese	100		10	3.0	1.0	ug/L		04/16/19 02:09	1

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/15/19 13:56	1

Client: KOMAN Government Solutions, LLC
Project/Site: LTM, AOC 57 Spring 2019

Job ID: 680-167230-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-566278/1-A
Matrix: Water
Analysis Batch: 566507

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 566278

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	18.6	J	50	50	17	ug/L		04/16/19 00:26	1
Manganese	3.0	U	10	3.0	1.0	ug/L		04/16/19 00:26	1

Lab Sample ID: LCS 680-566278/2-A
Matrix: Water
Analysis Batch: 566507

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 566278

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5000	5100		ug/L		102	87 - 115
Manganese	500	509		ug/L		102	90 - 114

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-566277/1-A
Matrix: Water
Analysis Batch: 566468

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 566277

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/15/19 12:29	1

Lab Sample ID: LCS 680-566277/2-A
Matrix: Water
Analysis Batch: 566468

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 566277

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	105		ug/L		105	84 - 116

QC Association Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM, AOC 57 Spring 2019

Job ID: 680-167230-1

Metals

Prep Batch: 566277

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167230-1	57-SW1_SPR19	Dissolved	Water	3005A	
680-167230-2	57-SWDUP_SPR19	Dissolved	Water	3005A	
MB 680-566277/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-566277/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 566278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167230-1	57-SW1_SPR19	Dissolved	Water	3005A	
680-167230-2	57-SWDUP_SPR19	Dissolved	Water	3005A	
MB 680-566278/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-566278/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 566468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167230-1	57-SW1_SPR19	Dissolved	Water	6020A	566277
680-167230-2	57-SWDUP_SPR19	Dissolved	Water	6020A	566277
MB 680-566277/1-A	Method Blank	Total Recoverable	Water	6020A	566277
LCS 680-566277/2-A	Lab Control Sample	Total Recoverable	Water	6020A	566277

Analysis Batch: 566507

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167230-1	57-SW1_SPR19	Dissolved	Water	6010C	566278
680-167230-2	57-SWDUP_SPR19	Dissolved	Water	6010C	566278
MB 680-566278/1-A	Method Blank	Total Recoverable	Water	6010C	566278
LCS 680-566278/2-A	Lab Control Sample	Total Recoverable	Water	6010C	566278

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM, AOC 57 Spring 2019

Job ID: 680-167230-1

Client Sample ID: 57-SW1_SPR19

Lab Sample ID: 680-167230-1

Date Collected: 04/05/19 12:50

Matrix: Water

Date Received: 04/09/19 09:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	566278	04/14/19 12:30	AJR	TAL SAV
Dissolved	Analysis	6010C		1			566507	04/16/19 02:05	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	566277	04/14/19 12:30	AJR	TAL SAV
Dissolved	Analysis	6020A		1			566468	04/15/19 13:44	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 57-SWDUP_SPR19

Lab Sample ID: 680-167230-2

Date Collected: 04/05/19 12:55

Matrix: Water

Date Received: 04/09/19 09:13

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	566278	04/14/19 12:30	AJR	TAL SAV
Dissolved	Analysis	6010C		1			566507	04/16/19 02:09	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	566277	04/14/19 12:30	AJR	TAL SAV
Dissolved	Analysis	6020A		1			566468	04/15/19 13:56	BJB	TAL SAV
	Instrument ID: ICPMSD									

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040819-AOC57

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 57 Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:
Area 57
On Ice

Equipment:

Code	Matrix
WG	Ground Water
WS	Surface Water

Code	Container/Preservative
9	1* 250mL, plastic,
HIDE	

680-167230 Chain of Custody

Event: KOMAN, Long Term Monitoring, AOC 57 Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init.	SW6010C/FLDFLT - Fe Mn	SW6010C - Fe Mn	SW6020A/FLDFLT - As	SW6020A - As	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
	Analytical Test Method					9	9	9	9						
1	~~57M-95-03X_SPR19~~	~~WG~~					X		X	57M-95-03X	N1	7.00	17.00		1
2	~~57M-95-03X_SPR19~~	~~WG~~					X		X	~~57M-95-03X~~	MS1	7.00	17.00		1
3	~~57M-95-03X_SPR19~~	~~WG~~					X		X	~~57M-95-03X~~	SD1	~~7.00~~	~~17.00~~		1
4	~~57M-96-11X_SPR19~~	~~WG~~					X		X	~~57M-96-11X~~	N1	~~2.00~~	~~12.00~~		1
5	~~57M-DUP01_SPR19~~	~~WG~~					X		X	~~57M-96-11X~~	FD1	~~2.00~~	~~12.00~~		1
6	57-SW1_SPR19	WS	04/05/19	1250	MM	X		X		57-SW1	N1	0.00	0.00	field filtered	1
7	57-SWDUP_SPR19	WS	04/05/19	1255	MM	X		X		57-SW1	FD1	0.00	0.00	field filtered	1
8															
9															
10															
		Turnaround Time: 21 Days													

Relinquished by: *(Signature)*	**Date**	**Time**
	04/05/19	1335
	4/5/19	1445
	4/8/19	1700

Received by: *(Signature)*	**Date**	**Time**
	4/5/19	1335
	4/5/19	1445

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* & condition

04/8/19 0913
2.2(CF)2.4°C

Page 1 of 2

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-167230-1

Login Number: 167230

List Source: Eurofins TestAmerica, Savannah

List Number: 1

Creator: Banda, Christy S

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-167230-1
Project/Site: LTM, AOC 57 Spring 2019

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-19 *
Alaska	State Program	10		06-30-19 *
Alaska (UST)	State Program	10	UST-104	09-22-19
ANAB	DoD / DOE		L2463	09-22-19
ANAB	ISO/IEC 17025		L2463.01	09-22-19
Arizona	State Program	9	AZ0808	12-14-19
Arkansas DEQ	State Program	6	88-0692	02-01-20
California	State Program	9	2939	06-30-19 *
Colorado	State Program	8	N/A	12-31-19
Connecticut	State Program	1	PH-0161	03-31-21
Florida	NELAP	4	E87052	06-30-19 *
GA Dept. of Agriculture	State Program	4	N/A	06-12-19
Georgia	State Program	4	N/A	06-30-19
Georgia	State Program	4	803	06-30-19
Guam	State Program	9	15-005r	04-17-19
Hawaii	State Program	9	N/A	06-30-19
Illinois	NELAP	5	200022	11-30-19
Indiana	State Program	5	N/A	06-30-19
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-19
Kentucky (UST)	State Program	4	18	06-30-19
Kentucky (WW)	State Program	4	90084	12-31-19
Louisiana	NELAP	6	30690	06-30-19
Louisiana (DW)	NELAP	6	LA160019	12-31-19
Maine	State Program	1	GA00006	09-25-20
Maryland	State Program	3	250	12-31-19
Massachusetts	State Program	1	M-GA006	06-30-19
Michigan	State Program	5	9925	03-05-19 *
Mississippi	State Program	4	N/A	06-30-19
Nebraska	State Program	7	TestAmerica-Savannah	06-30-19
New Jersey	NELAP	2	GA769	06-30-19 *
New Mexico	State Program	6	N/A	06-30-19
New York	NELAP	2	10842	04-01-19 *
North Carolina (DW)	State Program	4	13701	07-31-19
North Carolina (WW/SW)	State Program	4	269	12-31-19
Oklahoma	State Program	6	9984	08-31-19
Pennsylvania	NELAP	3	68-00474	06-30-19 *
Puerto Rico	State Program	2	GA00006	01-01-20
South Carolina	State Program	4	98001	06-30-19
Tennessee	State Program	4	TN02961	06-30-19 *
Texas	NELAP	6	T104704185-16-9	11-30-19
Texas (DW)	State Program	1	T104704185	06-30-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
Virginia	NELAP	3	460161	06-14-19 *
Washington	State Program	10	C805	06-10-19
West Virginia (DW)	State Program	3	9950C	12-31-19
West Virginia DEP	State Program	3	094	06-30-19
Wisconsin	State Program	5	999819810	08-31-19
Wyoming	State Program	8	8TMS-L	06-30-16 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-167491-3
Client Project/Site: Fort Devens AOC 57

For:
KOMAN Government Solutions, LLC
293 Boston Post Road
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Jerry Lanier

Authorized for release by:
4/26/2019 4:57:49 PM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

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

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

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

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Job ID: 680-167491-3

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: Fort Devens AOC 57

Report Number: 680-167491-3

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 the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 04/12/2019; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.4º C and 2.6º C.

METALS (ICP)
Samples 57M-95-03X_SPR19 (680-167491-12), 57M-96-11X_SPR19 (680-167491-13) and 57M-DUP01_SPR19 (680-167491-14) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 04/17/2019 and analyzed on 04/19/2019.

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

METALS
Samples 57M-95-03X_SPR19 (680-167491-12), 57M-96-11X_SPR19 (680-167491-13) and 57M-DUP01_SPR19 (680-167491-14) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 04/17/2019 and analyzed on 04/18/2019.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 57

Job ID: 680-167491-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-167491-12	57M-95-03X_SPR19	Water	04/08/19 08:15	04/12/19 10:27
680-167491-13	57M-96-11X_SPR19	Water	04/08/19 09:00	04/12/19 10:27
680-167491-14	57M-DUP01_SPR19	Water	04/08/19 09:10	04/12/19 10:27

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 57

Job ID: 680-167491-3

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
3010A	Preparation, Total Metals	SW846	TAL SAV

Protocol References:

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

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Definitions/Glossary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 57

Job ID: 680-167491-3

Qualifiers

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

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

Client Sample Results

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 57

Job ID: 680-167491-3

Client Sample ID: 57M-95-03X_SPR19

Lab Sample ID: 680-167491-12
Date Collected: 04/08/19 08:15
Matrix: Water
Date Received: 04/12/19 10:27

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	5600		50	50	17	ug/L		04/19/19 14:46	1
Manganese	160		10	3.0	1.0	ug/L		04/19/19 14:46	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	15		3.0	3.0	1.5	ug/L		04/18/19 15:09	1

Client Sample ID: 57M-96-11X_SPR19

Lab Sample ID: 680-167491-13
Date Collected: 04/08/19 09:00
Matrix: Water
Date Received: 04/12/19 10:27

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	36000		50	50	17	ug/L		04/19/19 15:05	1
Manganese	3000		10	3.0	1.0	ug/L		04/19/19 15:05	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	100		3.0	3.0	1.5	ug/L		04/18/19 15:32	1

Client Sample ID: 57M-DUP01_SPR19

Lab Sample ID: 680-167491-14
Date Collected: 04/08/19 09:10
Matrix: Water
Date Received: 04/12/19 10:27

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	38000		50	50	17	ug/L		04/19/19 15:01	1
Manganese	3100		10	3.0	1.0	ug/L		04/19/19 15:01	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	110		3.0	3.0	1.5	ug/L		04/18/19 15:28	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-566774/1-A
Matrix: Water
Analysis Batch: 567186

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 566774

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	50	U	50	50	17	ug/L		04/19/19 14:11	1
Manganese	3.0	U	10	3.0	1.0	ug/L		04/19/19 14:11	1

Lab Sample ID: LCS 680-566774/2-A
Matrix: Water
Analysis Batch: 567186

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 566774

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5000	5170		ug/L		103	87 - 115
Manganese	400	421		ug/L		105	90 - 114

Lab Sample ID: 680-167491-12 MS
Matrix: Water
Analysis Batch: 567186

Client Sample ID: 57M-95-03X_SPR19
Prep Type: Total/NA
Prep Batch: 566774

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5600		5000	10600		ug/L		99	87 - 115
Manganese	160		400	583		ug/L		105	90 - 114

Lab Sample ID: 680-167491-12 MSD
Matrix: Water
Analysis Batch: 567186

Client Sample ID: 57M-95-03X_SPR19
Prep Type: Total/NA
Prep Batch: 566774

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	5600		5000	10500		ug/L		98	87 - 115	0	20
Manganese	160		400	584		ug/L		105	90 - 114	0	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-566772/1-A
Matrix: Water
Analysis Batch: 567081

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 566772

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/18/19 14:20	1

Lab Sample ID: LCS 680-566772/2-A
Matrix: Water
Analysis Batch: 567081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 566772

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	104		ug/L		104	84 - 116

Lab Sample ID: 680-167491-12 MS
Matrix: Water
Analysis Batch: 567081

Client Sample ID: 57M-95-03X_SPR19
Prep Type: Total/NA
Prep Batch: 566772

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	15		100	111		ug/L		96	84 - 116

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 680-167491-12 MSD
Matrix: Water
Analysis Batch: 567081

Client Sample ID: 57M-95-03X_SPR19
Prep Type: Total/NA
Prep Batch: 566772

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	15		100	114		ug/L		99	84 - 116	2	20

Metals

Prep Batch: 566772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-12	57M-95-03X_SPR19	Total/NA	Water	3010A	
680-167491-13	57M-96-11X_SPR19	Total/NA	Water	3010A	
680-167491-14	57M-DUP01_SPR19	Total/NA	Water	3010A	
MB 680-566772/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-566772/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-167491-12 MS	57M-95-03X_SPR19	Total/NA	Water	3010A	
680-167491-12 MSD	57M-95-03X_SPR19	Total/NA	Water	3010A	

Prep Batch: 566774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-12	57M-95-03X_SPR19	Total/NA	Water	3010A	
680-167491-13	57M-96-11X_SPR19	Total/NA	Water	3010A	
680-167491-14	57M-DUP01_SPR19	Total/NA	Water	3010A	
MB 680-566774/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-566774/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-167491-12 MS	57M-95-03X_SPR19	Total/NA	Water	3010A	
680-167491-12 MSD	57M-95-03X_SPR19	Total/NA	Water	3010A	

Analysis Batch: 567081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-12	57M-95-03X_SPR19	Total/NA	Water	6020A	566772
680-167491-13	57M-96-11X_SPR19	Total/NA	Water	6020A	566772
680-167491-14	57M-DUP01_SPR19	Total/NA	Water	6020A	566772
MB 680-566772/1-A	Method Blank	Total/NA	Water	6020A	566772
LCS 680-566772/2-A	Lab Control Sample	Total/NA	Water	6020A	566772
680-167491-12 MS	57M-95-03X_SPR19	Total/NA	Water	6020A	566772
680-167491-12 MSD	57M-95-03X_SPR19	Total/NA	Water	6020A	566772

Analysis Batch: 567186

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-12	57M-95-03X_SPR19	Total/NA	Water	6010C	566774
680-167491-13	57M-96-11X_SPR19	Total/NA	Water	6010C	566774
680-167491-14	57M-DUP01_SPR19	Total/NA	Water	6010C	566774
MB 680-566774/1-A	Method Blank	Total/NA	Water	6010C	566774
LCS 680-566774/2-A	Lab Control Sample	Total/NA	Water	6010C	566774
680-167491-12 MS	57M-95-03X_SPR19	Total/NA	Water	6010C	566774
680-167491-12 MSD	57M-95-03X_SPR19	Total/NA	Water	6010C	566774

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 57

Job ID: 680-167491-3

Client Sample ID: 57M-95-03X_SPR19

Lab Sample ID: 680-167491-12
Date Collected: 04/08/19 08:15
Matrix: Water
Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6010C		1			567186	04/19/19 14:46	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 15:09	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 57M-96-11X_SPR19

Lab Sample ID: 680-167491-13
Date Collected: 04/08/19 09:00
Matrix: Water
Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6010C		1			567186	04/19/19 15:05	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 15:32	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 57M-DUP01_SPR19

Lab Sample ID: 680-167491-14
Date Collected: 04/08/19 09:10
Matrix: Water
Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6010C		1			567186	04/19/19 15:01	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 15:28	BWR	TAL SAV
	Instrument ID: ICPMSD									

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040819-AOC57

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 57 Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

AOC 57

Equipment:

Code	Matrix
WG	Ground Water
WS	Surface Water

Code	Container/Preservative
9	1* 250mL, plastic,
HIDE	

Event: KOMAN, Long Term Monitoring, AOC 57 Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init.	SW6010C/FLDFLT - Fe Mn	SW6010C - Fe Mn	SW6020A/FLDFLT - As	SW6020A - As	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
					Analytical Test Method	9	9	9	9						
1	57M-95-03X_SPR19	WG	4/8/19	0815	BrA		X		X	57M-95-03X	N1	7.00	17.00		1
2	57M-95-03X_SPR19	WG	4/8/19	0815	BrA		X		X	57M-95-03X	MS1	7.00	17.00		1
3	57M-95-03X_SPR19	WG	4/8/19	0815	BrA		X		X	57M-95-03X	SD1	7.00	17.00		1
4	57M-96-11X_SPR19	WG	4/8/19	0900	BrA		X		X	57M-96-11X	N1	2.00	12.00		1
5	57M-DUP01_SPR19	WG	4/8/19	0910	BrA		X		X	57M-96-11X	FD1	2.00	12.00		1
6	~~57-SW1_SPR19~~	~~WS~~				X		X		~~57-SW1~~	~~N1~~	~~0.00~~	~~0.00~~	~~field filtered~~	1
7	~~57-SWDUP_SPR19~~	~~WS~~				X		X		~~57-SW1~~	~~FD1~~	~~0.00~~	~~0.00~~	field filtered	1
8	~~57-SW1-SPR19~~	~~WS~~	~~4/8/19~~	~~0820~~	~~BrA~~		~~X~~		~~X~~	~~57-SW1~~	~~N1~~				
9															
10															
		Turnaround Time: 21 Days													

Relinquished by: *(Signature)*	Date	Time
[signature]	4/10/19	1520
[signature]	4-11-19	1410

Received by: *(Signature)*	Date	Time
[signature]	4-16-19	1500
0.3/2.5 (CF) 0.4/2.6		0

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

[signature] 04-12-19

1027

Page 1 of 2

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040819-AOC57

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 57 Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WS	Surface Water

Code	Container/Preservative
9	1* 250mL, plastic,
HIDE	

	Analytical Test Method	SW6010C/FLDFLT - Fe Mn	SW6010C - Fe Mn	SW6020A/FLDFLT - As	SW6020A - As
Event: KOMAN, Long Term Monitoring, AOC 57 Spring 2019		9	9	9	9

	Sample ID	Matrix	Date	Time	Samp Init.					Location ID	Sample Type	Depth (ft bgs) Top - Bottom		Comments	Cooler
11	57-SW1-SPR19	WS	4/8/19	0820	BrA		X		X	57-SW1	N,				
12															
13															
14															
15															
16															
17															
		Turnaround Time: 21 Days													

Relinquished by: *(Signature)*	Date	Time
[signature]	4/10/19	1520
[signature]	4-11-19	1800

Received by: *(Signature)*	Date	Time
[signature]	4-10-19	1520
0.3/2.5(CF) 0.4/2.6°		

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

[signature] 04-12-19
10:27

Page 2 of 2

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-167491-3

Login Number: 167491
List Number: 1
Creator: Banda, Christy S

List Source: Eurofins TestAmerica, Savannah

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-167491-3
Project/Site: Fort Devens AOC 57

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-19 *
Alaska	State Program	10		06-30-19 *
Alaska (UST)	State Program	10	UST-104	09-22-19
ANAB	DoD / DOE		L2463	09-22-19
ANAB	ISO/IEC 17025		L2463.01	09-22-19
Arizona	State Program	9	AZ0808	12-14-19
Arkansas DEQ	State Program	6	88-0692	02-01-20
California	State Program	9	2939	06-30-19 *
Colorado	State Program	8	N/A	12-31-19
Connecticut	State Program	1	PH-0161	03-31-21
Florida	NELAP	4	E87052	06-30-19 *
GA Dept. of Agriculture	State Program	4	N/A	06-12-19
Georgia	State Program	4	N/A	06-30-19 *
Georgia	State Program	4	803	06-30-19 *
Guam	State Program	9	15-005r	04-17-20
Hawaii	State Program	9	N/A	06-30-19
Illinois	NELAP	5	200022	11-30-19
Indiana	State Program	5	N/A	06-30-19
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-19
Kentucky (UST)	State Program	4	18	06-30-19
Kentucky (WW)	State Program	4	90084	12-31-19
Louisiana	NELAP	6	30690	06-30-19
Louisiana (DW)	NELAP	6	LA160019	12-31-19
Maine	State Program	1	GA00006	09-25-20
Maryland	State Program	3	250	12-31-19
Massachusetts	State Program	1	M-GA006	06-30-19
Michigan	State Program	5	9925	03-05-19 *
Mississippi	State Program	4	N/A	06-30-19
Nebraska	State Program	7	TestAmerica-Savannah	06-30-19
New Jersey	NELAP	2	GA769	06-30-19 *
New Mexico	State Program	6	N/A	06-30-19
New York	NELAP	2	10842	04-01-20
North Carolina (DW)	State Program	4	13701	07-31-19
North Carolina (WW/SW)	State Program	4	269	12-31-19
Oklahoma	State Program	6	9984	08-31-19
Pennsylvania	NELAP	3	68-00474	06-30-19 *
Puerto Rico	State Program	2	GA00006	01-01-20
South Carolina	State Program	4	98001	06-30-19 *
Tennessee	State Program	4	TN02961	06-30-19 *
Texas	NELAP	6	T104704185-16-9	11-30-19
Texas (DW)	State Program	1	T104704185	06-30-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
Virginia	NELAP	3	460161	06-14-19 *
Washington	State Program	10	C805	06-10-19
West Virginia (DW)	State Program	3	9950C	12-31-19
West Virginia DEP	State Program	3	094	06-30-19
Wisconsin	State Program	5	999819810	08-31-19
Wyoming	State Program	8	8TMS-L	06-30-16 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-167491-1
Client Project/Site: Fort Devens DCL
Revision: 1

For:
KOMAN Government Solutions, LLC
293 Boston Post Road
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Jerry Lanier

Authorized for release by:
6/5/2019 9:26:19 AM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

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

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

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

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Job ID: 680-167491-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE
Client: KOMAN Government Solutions, LLC
Project: Fort Devens DCL

Report Number: 680-167491-1

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 the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 04/12/2019; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.4º C and 2.6º C.

Revised report - The final report was revised to report select metals by 6010C as requested on the COC.

PESTICIDES AND PCBS
Samples LFM-03-07_SPR19 (680-167491-1), LFM-99-02B_SPR19 (680-167491-3), LFM-99-05A_SPR19 (680-167491-4), LFM-DUP01_SPR19 (680-167491-5) and LFM-99-06ARP_SPR19 (680-167491-6) were analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 04/16/2019 and analyzed on 04/28/2019.

Aldrin exceeded the RPD limit for the MSD of sample LFM-99-02B_SPR19MSD (680-167491-3) in batch 680-568193.

Surrogate recovery for the following samples were outside acceptance limits: LFM-03-07_SPR19 (680-167491-1), LFM-99-02B_SPR19 (680-167491-3[MS]) and (MB 680-566463/18-A). The results have been reported with data qualifiers.

The laboratory control sample (LCS) for preparation batch 680-566463 and analytical batch 680-568193 recovered outside control limits for the following analytes: 4,4'-DDE, Aldrin and Heptachlor.

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

METALS (ICP)
Samples LFM-03-07_SPR19 (680-167491-1), LFM-99-02B_SPR19 (680-167491-3), LFM-99-05A_SPR19 (680-167491-4), LFM-DUP01_SPR19 (680-167491-5) and LFM-99-06ARP_SPR19 (680-167491-6) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 04/17/2019 and analyzed on 06/04/2019.

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

METALS
Samples LFM-03-07_SPR19 (680-167491-1), LFM-99-02B_SPR19 (680-167491-3), LFM-99-05A_SPR19 (680-167491-4), LFM-DUP01_SPR19 (680-167491-5) and LFM-99-06ARP_SPR19 (680-167491-6) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 04/17/2019 and analyzed on 04/18/2019.

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

MERCURY
Samples LFM-03-07_SPR19 (680-167491-1), LFM-99-02B_SPR19 (680-167491-3), LFM-99-05A_SPR19 (680-167491-4), LFM-DUP01_SPR19 (680-167491-5) and LFM-99-06ARP_SPR19 (680-167491-6) were analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 04/19/2019 and analyzed on 04/20/2019.

Job ID: 680-167491-1 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

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

ALKALINITY
Samples LFM-03-07_SPR19 (680-167491-1), LFM-99-02B_SPR19 (680-167491-3), LFM-99-05A_SPR19 (680-167491-4), LFM-DUP01_SPR19 (680-167491-5) and LFM-99-06ARP_SPR19 (680-167491-6) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 04/17/2019.

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

TOTAL DISSOLVED SOLIDS
Samples LFM-03-07_SPR19 (680-167491-1), LFM-99-02B_SPR19 (680-167491-3), LFM-99-05A_SPR19 (680-167491-4), LFM-DUP01_SPR19 (680-167491-5) and LFM-99-06ARP_SPR19 (680-167491-6) were analyzed for total dissolved solids in accordance with SM 2540C. The samples were analyzed on 04/16/2019 and 04/17/2019.

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

NITRATE-NITRITE AS NITROGEN
Samples LFM-03-07_SPR19 (680-167491-1), LFM-99-02B_SPR19 (680-167491-3), LFM-99-05A_SPR19 (680-167491-4), LFM-DUP01_SPR19 (680-167491-5) and LFM-99-06ARP_SPR19 (680-167491-6) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 04/17/2019.

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

CHEMICAL OXYGEN DEMAND
Samples LFM-03-07_SPR19 (680-167491-1), LFM-99-02B_SPR19 (680-167491-3), LFM-99-05A_SPR19 (680-167491-4), LFM-DUP01_SPR19 (680-167491-5) and LFM-99-06ARP_SPR19 (680-167491-6) were analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 04/18/2019.

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

CYANIDE
Samples LFM-03-07_SPR19 (680-167491-1), LFM-99-02B_SPR19 (680-167491-3), LFM-99-05A_SPR19 (680-167491-4), LFM-DUP01_SPR19 (680-167491-5) and LFM-99-06ARP_SPR19 (680-167491-6) were analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 04/19/2019.

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

ANIONS BY ION CHROMATOGRAPHY (28 DAY)
Samples LFM-03-07_SPR19 (680-167491-1), LFM-99-02B_SPR19 (680-167491-3), LFM-99-05A_SPR19 (680-167491-4), LFM-DUP01_SPR19 (680-167491-5) and LFM-99-06ARP_SPR19 (680-167491-6) were analyzed for Anions by Ion Chromatography (28 Day) in accordance with SW 846 9056A. The samples were analyzed on 04/26/2019.

Samples LFM-03-07_SPR19 (680-167491-1)[5X], LFM-99-02B_SPR19 (680-167491-3)[5X], LFM-99-05A_SPR19 (680-167491-4)[5X], LFM-DUP01_SPR19 (680-167491-5)[5X] and LFM-99-06ARP_SPR19 (680-167491-6)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

Subcontract Work
Methods MA EPH, MA VPH: These methods were subcontracted to Katahdin Analytical Services Inc. The subcontract laboratory certifications are different from that of the facility issuing the final report.

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens DCL

Job ID: 680-167491-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-167491-1	LFM-03-07_SPR19	Water	04/10/19 08:40	04/12/19 10:27	
680-167491-3	LFM-99-02B_SPR19	Water	04/10/19 10:50	04/12/19 10:27	
680-167491-4	LFM-99-05A_SPR19	Water	04/09/19 13:12	04/12/19 10:27	
680-167491-5	LFM-DUP01_SPR19	Water	04/09/19 13:17	04/12/19 10:27	
680-167491-6	LFM-99-06ARP_SPR19	Water	04/10/19 08:35	04/12/19 10:27	
680-167491-16	LFM-TRIP BLANK_SPR19	Water	04/10/19 00:00	04/12/19 10:27	

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens DCL

Job ID: 680-167491-1

Method	Method Description	Protocol	Laboratory
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
9056A	Anions, Ion Chromatography	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL DEN
410.4	COD	MCAWW	TAL DEN
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
MA-EPH	MADEP EPH (Extractable Petroleum Hydroca	MA DEP	
MA-VPH	MADEP VPH Volatile Petroleum Hydrocarbon	MA DEP	
3010A	Preparation, Total Metals	SW846	TAL SAV
3520C	Liquid-Liquid Extraction (Continuous)	SW846	TAL SAV
7470A	Preparation, Mercury	SW846	TAL SAV
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency
MA DEP = Massachusetts Department Of Environmental Protection
MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074
TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

HPLC/IC

Qualifier	Qualifier Description
D	The reported value is from a dilution.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

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

Client Sample ID: LFM-03-07_SPR19
Date Collected: 04/10/19 08:40
Date Received: 04/12/19 10:27

Lab Sample ID: 680-167491-1
Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0092	U Q	0.026	0.0092	0.0037	ug/L		04/28/19 00:09	1
alpha-BHC	0.0051	U	0.026	0.0051	0.0017	ug/L		04/28/19 00:09	1
beta-BHC	0.0092	U	0.026	0.0092	0.0046	ug/L		04/28/19 00:09	1
Chlordane (technical)	0.15	U	0.26	0.15	0.048	ug/L		04/28/19 00:09	1
4,4'-DDD	0.0051	U M	0.026	0.0051	0.0032	ug/L		04/28/19 00:09	1
4,4'-DDE	0.0051	U M Q	0.026	0.0051	0.0026	ug/L		04/28/19 00:09	1
4,4'-DDT	**0.010**	**J**	0.026	0.0092	0.0036	ug/L		04/28/19 00:09	1
delta-BHC	0.0092	U	0.026	0.0092	0.0038	ug/L		04/28/19 00:09	1
Dieldrin	0.0051	U	0.026	0.0051	0.0019	ug/L		04/28/19 00:09	1
Endosulfan I	0.0051	U	0.026	0.0051	0.0018	ug/L		04/28/19 00:09	1
Endosulfan II	0.0051	U	0.026	0.0051	0.0021	ug/L		04/28/19 00:09	1
Endosulfan sulfate	0.0051	U	0.026	0.0051	0.0026	ug/L		04/28/19 00:09	1
Endrin	0.0051	U	0.026	0.0051	0.0027	ug/L		04/28/19 00:09	1
Endrin aldehyde	0.0051	U	0.026	0.0051	0.0031	ug/L		04/28/19 00:09	1
Endrin ketone	0.0051	U M	0.026	0.0051	0.0023	ug/L		04/28/19 00:09	1
gamma-BHC (Lindane)	0.0051	U	0.026	0.0051	0.0018	ug/L		04/28/19 00:09	1
Heptachlor	0.0092	U Q	0.026	0.0092	0.0036	ug/L		04/28/19 00:09	1
Heptachlor epoxide	0.0051	U	0.026	0.0051	0.0019	ug/L		04/28/19 00:09	1
Methoxychlor	0.0092	U	0.026	0.0092	0.0050	ug/L		04/28/19 00:09	1
Toxaphene	0.41	U M	2.6	0.41	0.20	ug/L		04/28/19 00:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*47*		*14 - 130*	*04/16/19 14:28*	*04/28/19 00:09*	*1*
Tetrachloro-m-xylene	*38*	*Q*	*44 - 124*	*04/16/19 14:28*	*04/28/19 00:09*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**250**	**D**	2.5	2.5	1.0	mg/L		04/26/19 17:44	5
Sulfate	**28**	**D**	5.0	5.0	2.0	mg/L		04/26/19 17:44	5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**21**		10	5.0	1.7	ug/L		06/04/19 01:31	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		06/04/19 01:31	1
Chromium	4.0	U	10	4.0	1.6	ug/L		06/04/19 01:31	1
Copper	5.0	U	20	5.0	1.8	ug/L		06/04/19 01:31	1
Iron	50	U	50	50	17	ug/L		06/04/19 01:31	1
Lead	10	U	10	10	3.9	ug/L		06/04/19 01:31	1
Manganese	**1.8**	**J**	10	3.0	1.0	ug/L		06/04/19 01:31	1
Selenium	**14**	**J**	20	20	9.9	ug/L		06/04/19 01:31	1
Silver	1.5	U	10	1.5	0.60	ug/L		06/04/19 01:31	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/18/19 15:20	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		04/20/19 13:49	1

Client Sample ID: LFM-03-07_SPR19

Lab Sample ID: 680-167491-1
Date Collected: 04/10/19 08:40
Matrix: Water
Date Received: 04/12/19 10:27

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**1.2**		0.10	0.050	0.019	mg/L		04/17/19 17:27	1
Chemical Oxygen Demand	20	U	20	20	8.7	mg/L		04/18/19 08:41	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		04/19/19 11:22	1
Alkalinity	**95**		10	10	3.1	mg/L		04/17/19 21:22	1
Total Dissolved Solids (TDS)	**580**		10	10	4.7	mg/L		04/17/19 13:55	1

Client Sample ID: LFM-99-02B_SPR19

Lab Sample ID: 680-167491-3
Date Collected: 04/10/19 10:50
Matrix: Water
Date Received: 04/12/19 10:27

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0086	U Q	0.024	0.0086	0.0035	ug/L		04/28/19 00:25	1
alpha-BHC	0.0048	U	0.024	0.0048	0.0016	ug/L		04/28/19 00:25	1
beta-BHC	0.0086	U	0.024	0.0086	0.0044	ug/L		04/28/19 00:25	1
Chlordane (technical)	0.14	U M	0.24	0.14	0.046	ug/L		04/28/19 00:25	1
4,4'-DDD	0.0048	U M	0.024	0.0048	0.0030	ug/L		04/28/19 00:25	1
4,4'-DDE	0.0048	U Q	0.024	0.0048	0.0024	ug/L		04/28/19 00:25	1
4,4'-DDT	0.0086	U	0.024	0.0086	0.0034	ug/L		04/28/19 00:25	1
delta-BHC	0.0086	U	0.024	0.0086	0.0036	ug/L		04/28/19 00:25	1
Dieldrin	0.0048	U	0.024	0.0048	0.0018	ug/L		04/28/19 00:25	1
Endosulfan I	0.0048	U	0.024	0.0048	0.0017	ug/L		04/28/19 00:25	1
Endosulfan II	0.0048	U	0.024	0.0048	0.0020	ug/L		04/28/19 00:25	1
Endosulfan sulfate	0.0048	U	0.024	0.0048	0.0024	ug/L		04/28/19 00:25	1
Endrin	0.0048	U	0.024	0.0048	0.0025	ug/L		04/28/19 00:25	1
Endrin aldehyde	0.0048	U M	0.024	0.0048	0.0029	ug/L		04/28/19 00:25	1
Endrin ketone	0.0048	U M	0.024	0.0048	0.0022	ug/L		04/28/19 00:25	1
gamma-BHC (Lindane)	0.0048	U M	0.024	0.0048	0.0017	ug/L		04/28/19 00:25	1
Heptachlor	0.0086	U Q	0.024	0.0086	0.0034	ug/L		04/28/19 00:25	1
Heptachlor epoxide	0.0048	U	0.024	0.0048	0.0018	ug/L		04/28/19 00:25	1
Methoxychlor	0.0086	U	0.024	0.0086	0.0047	ug/L		04/28/19 00:25	1
Toxaphene	0.38	U M	2.4	0.38	0.19	ug/L		04/28/19 00:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*66*		*14 - 130*	*04/16/19 14:28*	*04/28/19 00:25*	*1*
Tetrachloro-m-xylene	*50*		*44 - 124*	*04/16/19 14:28*	*04/28/19 00:25*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**180**	**D**	2.5	2.5	1.0	mg/L		04/26/19 16:16	5
Sulfate	**20**	**D**	5.0	5.0	2.0	mg/L		04/26/19 16:16	5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**5.8**	**J**	10	5.0	1.7	ug/L		06/04/19 00:58	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		06/04/19 00:58	1
Chromium	4.0	U	10	4.0	1.6	ug/L		06/04/19 00:58	1
Copper	5.0	U	20	5.0	1.8	ug/L		06/04/19 00:58	1
Iron	50	U	50	50	17	ug/L		06/04/19 00:58	1
Lead	10	U	10	10	3.9	ug/L		06/04/19 00:58	1
Manganese	3.0	U	10	3.0	1.0	ug/L		06/04/19 00:58	1

Client Sample ID: LFM-99-02B_SPR19

Lab Sample ID: 680-167491-3
Date Collected: 04/10/19 10:50
Matrix: Water
Date Received: 04/12/19 10:27

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Selenium	20	U	20	20	9.9	ug/L		06/04/19 00:58	1
Silver	1.5	U	10	1.5	0.60	ug/L		06/04/19 00:58	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/18/19 14:28	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		04/20/19 13:53	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.28**		0.10	0.050	0.019	mg/L		04/17/19 17:21	1
Chemical Oxygen Demand	20	U	20	20	8.7	mg/L		04/18/19 08:41	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		04/19/19 11:23	1
Alkalinity	**65**		10	10	3.1	mg/L		04/17/19 21:28	1
Total Dissolved Solids (TDS)	**390**		10	10	4.7	mg/L		04/16/19 16:41	1

Client Sample ID: LFM-99-05A_SPR19

Lab Sample ID: 680-167491-4
Date Collected: 04/09/19 13:12
Matrix: Water
Date Received: 04/12/19 10:27

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0093	U Q	0.026	0.0093	0.0037	ug/L		04/28/19 00:41	1
alpha-BHC	0.0051	U	0.026	0.0051	0.0017	ug/L		04/28/19 00:41	1
beta-BHC	0.0093	U	0.026	0.0093	0.0047	ug/L		04/28/19 00:41	1
Chlordane (technical)	0.15	U	0.26	0.15	0.049	ug/L		04/28/19 00:41	1
4,4'-DDD	0.0051	U M	0.026	0.0051	0.0032	ug/L		04/28/19 00:41	1
4,4'-DDE	0.0051	U M Q	0.026	0.0051	0.0026	ug/L		04/28/19 00:41	1
4,4'-DDT	0.0093	U	0.026	0.0093	0.0036	ug/L		04/28/19 00:41	1
delta-BHC	0.0093	U	0.026	0.0093	0.0039	ug/L		04/28/19 00:41	1
Dieldrin	0.0051	U	0.026	0.0051	0.0020	ug/L		04/28/19 00:41	1
Endosulfan I	0.0051	U	0.026	0.0051	0.0018	ug/L		04/28/19 00:41	1
Endosulfan II	0.0051	U	0.026	0.0051	0.0022	ug/L		04/28/19 00:41	1
Endosulfan sulfate	0.0051	U	0.026	0.0051	0.0026	ug/L		04/28/19 00:41	1
Endrin	0.0051	U	0.026	0.0051	0.0027	ug/L		04/28/19 00:41	1
Endrin aldehyde	0.0051	U	0.026	0.0051	0.0031	ug/L		04/28/19 00:41	1
Endrin ketone	0.0051	U M	0.026	0.0051	0.0024	ug/L		04/28/19 00:41	1
gamma-BHC (Lindane)	0.0051	U	0.026	0.0051	0.0019	ug/L		04/28/19 00:41	1
Heptachlor	0.0093	U Q	0.026	0.0093	0.0036	ug/L		04/28/19 00:41	1
Heptachlor epoxide	0.0051	U	0.026	0.0051	0.0019	ug/L		04/28/19 00:41	1
Methoxychlor	0.0093	U	0.026	0.0093	0.0050	ug/L		04/28/19 00:41	1
Toxaphene	0.41	U M	2.6	0.41	0.21	ug/L		04/28/19 00:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*63*		*14 - 130*	*04/16/19 14:28*	*04/28/19 00:41*	*1*
Tetrachloro-m-xylene	*54*		*44 - 124*	*04/16/19 14:28*	*04/28/19 00:41*	*1*

Client Sample ID: LFM-99-05A_SPR19

Lab Sample ID: 680-167491-4

Date Collected: 04/09/19 13:12

Matrix: Water

Date Received: 04/12/19 10:27

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**98**	**D**	2.5	2.5	1.0	mg/L		04/26/19 17:57	5
Sulfate	**20**	**D**	5.0	5.0	2.0	mg/L		04/26/19 17:57	5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**6.7**	**J**	10	5.0	1.7	ug/L		06/04/19 01:45	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		06/04/19 01:45	1
Chromium	4.0	U	10	4.0	1.6	ug/L		06/04/19 01:45	1
Copper	5.0	U	20	5.0	1.8	ug/L		06/04/19 01:45	1
Iron	**130**		50	50	17	ug/L		06/04/19 01:45	1
Lead	10	U	10	10	3.9	ug/L		06/04/19 01:45	1
Manganese	**4.9**	**J**	10	3.0	1.0	ug/L		06/04/19 01:45	1
Selenium	20	U	20	20	9.9	ug/L		06/04/19 01:45	1
Silver	1.5	U	10	1.5	0.60	ug/L		06/04/19 01:45	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/18/19 16:07	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		04/20/19 14:19	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.47**		0.10	0.050	0.019	mg/L		04/17/19 17:29	1
Chemical Oxygen Demand	20	U	20	20	8.7	mg/L		04/18/19 08:41	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		04/19/19 11:26	1
Alkalinity	**90**		10	10	3.1	mg/L		04/17/19 21:35	1
Total Dissolved Solids (TDS)	**290**		10	10	4.7	mg/L		04/16/19 16:41	1

Client Sample ID: LFM-DUP01_SPR19

Lab Sample ID: 680-167491-5

Date Collected: 04/09/19 13:17

Matrix: Water

Date Received: 04/12/19 10:27

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0090	U Q	0.025	0.0090	0.0036	ug/L		04/28/19 00:57	1
alpha-BHC	0.0050	U	0.025	0.0050	0.0017	ug/L		04/28/19 00:57	1
beta-BHC	0.0090	U	0.025	0.0090	0.0046	ug/L		04/28/19 00:57	1
Chlordane (technical)	0.15	U	0.25	0.15	0.048	ug/L		04/28/19 00:57	1
4,4'-DDD	0.0050	U M	0.025	0.0050	0.0032	ug/L		04/28/19 00:57	1
4,4'-DDE	0.0050	U Q	0.025	0.0050	0.0026	ug/L		04/28/19 00:57	1
4,4'-DDT	0.0090	U	0.025	0.0090	0.0035	ug/L		04/28/19 00:57	1
delta-BHC	0.0090	U	0.025	0.0090	0.0038	ug/L		04/28/19 00:57	1
Dieldrin	0.0050	U	0.025	0.0050	0.0019	ug/L		04/28/19 00:57	1
Endosulfan I	0.0050	U	0.025	0.0050	0.0018	ug/L		04/28/19 00:57	1
Endosulfan II	0.0050	U	0.025	0.0050	0.0021	ug/L		04/28/19 00:57	1
Endosulfan sulfate	0.0050	U	0.025	0.0050	0.0026	ug/L		04/28/19 00:57	1
Endrin	0.0050	U	0.025	0.0050	0.0027	ug/L		04/28/19 00:57	1
Endrin aldehyde	0.0050	U	0.025	0.0050	0.0031	ug/L		04/28/19 00:57	1

Client Sample ID: LFM-DUP01_SPR19

Lab Sample ID: 680-167491-5
Date Collected: 04/09/19 13:17
Matrix: Water
Date Received: 04/12/19 10:27

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Endrin ketone	0.0050	U M	0.025	0.0050	0.0023	ug/L		04/28/19 00:57	1
gamma-BHC (Lindane)	0.0050	U	0.025	0.0050	0.0018	ug/L		04/28/19 00:57	1
Heptachlor	0.0090	U Q	0.025	0.0090	0.0036	ug/L		04/28/19 00:57	1
Heptachlor epoxide	0.0050	U	0.025	0.0050	0.0019	ug/L		04/28/19 00:57	1
Methoxychlor	0.0090	U	0.025	0.0090	0.0049	ug/L		04/28/19 00:57	1
Toxaphene	0.40	U M	2.5	0.40	0.20	ug/L		04/28/19 00:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*81*		*14 - 130*	*04/16/19 14:28*	*04/28/19 00:57*	*1*
Tetrachloro-m-xylene	*54*		*44 - 124*	*04/16/19 14:28*	*04/28/19 00:57*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**97**	**D**	2.5	2.5	1.0	mg/L		04/26/19 18:10	5
Sulfate	**20**	**D**	5.0	5.0	2.0	mg/L		04/26/19 18:10	5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**8.0**	**J**	10	5.0	1.7	ug/L		06/04/19 01:35	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		06/04/19 01:35	1
Chromium	4.0	U	10	4.0	1.6	ug/L		06/04/19 01:35	1
Copper	5.0	U	20	5.0	1.8	ug/L		06/04/19 01:35	1
Iron	**490**		50	50	17	ug/L		06/04/19 01:35	1
Lead	10	U	10	10	3.9	ug/L		06/04/19 01:35	1
Manganese	**14**		10	3.0	1.0	ug/L		06/04/19 01:35	1
Selenium	20	U	20	20	9.9	ug/L		06/04/19 01:35	1
Silver	1.5	U	10	1.5	0.60	ug/L		06/04/19 01:35	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**1.8**	**J**	3.0	3.0	1.5	ug/L		04/18/19 15:59	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		04/20/19 14:12	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.49**		0.10	0.050	0.019	mg/L		04/17/19 17:31	1
Chemical Oxygen Demand	20	U	20	20	8.7	mg/L		04/18/19 08:41	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		04/19/19 11:27	1
Alkalinity	**89**		10	10	3.1	mg/L		04/17/19 21:42	1
Total Dissolved Solids (TDS)	**290**		10	10	4.7	mg/L		04/16/19 16:41	1

Client Sample ID: LFM-99-06ARP_SPR19

Lab Sample ID: 680-167491-6
Date Collected: 04/10/19 08:35
Matrix: Water
Date Received: 04/12/19 10:27

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0087	U Q	0.024	0.0087	0.0035	ug/L		04/28/19 01:13	1

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens DCL

Job ID: 680-167491-1

Client Sample ID: LFM-99-06ARP_SPR19

Date Collected: 04/10/19 08:35
Date Received: 04/12/19 10:27

Lab Sample ID: 680-167491-6

Matrix: Water

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
alpha-BHC	0.0048	U	0.024	0.0048	0.0016	ug/L		04/28/19 01:13	1
beta-BHC	0.0087	U	0.024	0.0087	0.0044	ug/L		04/28/19 01:13	1
Chlordane (technical)	0.14	U M	0.24	0.14	0.046	ug/L		04/28/19 01:13	1
4,4'-DDD	0.0048	U M	0.024	0.0048	0.0030	ug/L		04/28/19 01:13	1
4,4'-DDE	0.0048	U M Q	0.024	0.0048	0.0025	ug/L		04/28/19 01:13	1
4,4'-DDT	0.0087	U	0.024	0.0087	0.0034	ug/L		04/28/19 01:13	1
delta-BHC	0.0087	U	0.024	0.0087	0.0036	ug/L		04/28/19 01:13	1
Dieldrin	0.0048	U	0.024	0.0048	0.0018	ug/L		04/28/19 01:13	1
Endosulfan I	0.0048	U	0.024	0.0048	0.0017	ug/L		04/28/19 01:13	1
Endosulfan II	0.0048	U	0.024	0.0048	0.0020	ug/L		04/28/19 01:13	1
Endosulfan sulfate	0.0048	U	0.024	0.0048	0.0025	ug/L		04/28/19 01:13	1
Endrin	0.0048	U	0.024	0.0048	0.0026	ug/L		04/28/19 01:13	1
Endrin aldehyde	0.0048	U M	0.024	0.0048	0.0029	ug/L		04/28/19 01:13	1
Endrin ketone	0.0048	U M	0.024	0.0048	0.0022	ug/L		04/28/19 01:13	1
gamma-BHC (Lindane)	0.0048	U	0.024	0.0048	0.0017	ug/L		04/28/19 01:13	1
Heptachlor	0.0087	U Q	0.024	0.0087	0.0034	ug/L		04/28/19 01:13	1
Heptachlor epoxide	0.0048	U	0.024	0.0048	0.0018	ug/L		04/28/19 01:13	1
Methoxychlor	0.0087	U	0.024	0.0087	0.0047	ug/L		04/28/19 01:13	1
Toxaphene	0.39	U M	2.4	0.39	0.19	ug/L		04/28/19 01:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*65*		*14 - 130*	*04/16/19 14:28*	*04/28/19 01:13*	*1*
Tetrachloro-m-xylene	*64*		*44 - 124*	*04/16/19 14:28*	*04/28/19 01:13*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**250**	**D**	2.5	2.5	1.0	mg/L		04/26/19 18:22	5
Sulfate	**27**	**D**	5.0	5.0	2.0	mg/L		04/26/19 18:22	5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**3.4**	**J**	10	5.0	1.7	ug/L		06/04/19 01:40	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		06/04/19 01:40	1
Chromium	4.0	U	10	4.0	1.6	ug/L		06/04/19 01:40	1
Copper	5.0	U	20	5.0	1.8	ug/L		06/04/19 01:40	1
Iron	50	U	50	50	17	ug/L		06/04/19 01:40	1
Lead	10	U	10	10	3.9	ug/L		06/04/19 01:40	1
Manganese	3.0	U	10	3.0	1.0	ug/L		06/04/19 01:40	1
Selenium	20	U	20	20	9.9	ug/L		06/04/19 01:40	1
Silver	1.5	U	10	1.5	0.60	ug/L		06/04/19 01:40	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/18/19 16:03	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		04/20/19 14:16	1

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens DCL

Job ID: 680-167491-1

Client Sample ID: LFM-99-06ARP_SPR19
Date Collected: 04/10/19 08:35
Date Received: 04/12/19 10:27

Lab Sample ID: 680-167491-6
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.81**		0.10	0.050	0.019	mg/L		04/17/19 17:33	1
Chemical Oxygen Demand	20	U	20	20	8.7	mg/L		04/18/19 08:41	1
Cyanide, Total	**0.0050**	**J**	0.010	0.0050	0.0025	mg/L		04/19/19 11:28	1
Alkalinity	**100**		10	10	3.1	mg/L		04/17/19 21:50	1
Total Dissolved Solids (TDS)	**550**		10	10	4.7	mg/L		04/16/19 16:41	1

Surrogate Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens DCL

Job ID: 680-167491-1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)											
Lab Sample ID	Client Sample ID	DCBP1 (14-130)	TCX1 (44-124)										
680-167491-1	LFM-03-07_SPR19	47	38 Q										
680-167491-3	LFM-99-02B_SPR19	66	50										
680-167491-3 MS	LFM-99-02B_SPR19	43	42 Q										
680-167491-3 MSD	LFM-99-02B_SPR19	39	47										
680-167491-4	LFM-99-05A_SPR19	63	54										
680-167491-5	LFM-DUP01_SPR19	81	54										
680-167491-6	LFM-99-06ARP_SPR19	65	64										
LCS 680-566463/19-A	Lab Control Sample	83	52										
MB 680-566463/18-A	Method Blank	93	40 Q										

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-566463/18-A
Matrix: Water
Analysis Batch: 568193

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 566463

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0090	U	0.025	0.0090	0.0036	ug/L		04/27/19 23:05	1
alpha-BHC	0.0050	U	0.025	0.0050	0.0017	ug/L		04/27/19 23:05	1
beta-BHC	0.0090	U	0.025	0.0090	0.0046	ug/L		04/27/19 23:05	1
Chlordane (technical)	0.15	U M	0.25	0.15	0.048	ug/L		04/27/19 23:05	1
4,4'-DDD	0.0050	U	0.025	0.0050	0.0032	ug/L		04/27/19 23:05	1
4,4'-DDE	0.0050	U M	0.025	0.0050	0.0026	ug/L		04/27/19 23:05	1
4,4'-DDT	0.0090	U	0.025	0.0090	0.0035	ug/L		04/27/19 23:05	1
delta-BHC	0.0090	U	0.025	0.0090	0.0038	ug/L		04/27/19 23:05	1
Dieldrin	0.0050	U	0.025	0.0050	0.0019	ug/L		04/27/19 23:05	1
Endosulfan I	0.0050	U	0.025	0.0050	0.0018	ug/L		04/27/19 23:05	1
Endosulfan II	0.0050	U	0.025	0.0050	0.0021	ug/L		04/27/19 23:05	1
Endosulfan sulfate	0.0050	U	0.025	0.0050	0.0026	ug/L		04/27/19 23:05	1
Endrin	0.0050	U	0.025	0.0050	0.0027	ug/L		04/27/19 23:05	1
Endrin aldehyde	0.0050	U	0.025	0.0050	0.0031	ug/L		04/27/19 23:05	1
Endrin ketone	0.0050	U M	0.025	0.0050	0.0023	ug/L		04/27/19 23:05	1
gamma-BHC (Lindane)	0.0050	U	0.025	0.0050	0.0018	ug/L		04/27/19 23:05	1
Heptachlor	0.0090	U	0.025	0.0090	0.0036	ug/L		04/27/19 23:05	1
Heptachlor epoxide	0.0050	U	0.025	0.0050	0.0019	ug/L		04/27/19 23:05	1
Methoxychlor	0.0090	U	0.025	0.0090	0.0049	ug/L		04/27/19 23:05	1
Toxaphene	0.40	U M	2.5	0.40	0.20	ug/L		04/27/19 23:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*93*		*14 - 130*	*04/16/19 14:28*	*04/27/19 23:05*	*1*
Tetrachloro-m-xylene	*40*	*Q*	*44 - 124*	*04/16/19 14:28*	*04/27/19 23:05*	*1*

Lab Sample ID: LCS 680-566463/19-A
Matrix: Water
Analysis Batch: 568193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 566463

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.0500	0.0152	J Q	ug/L		30	45 - 134
alpha-BHC	0.0500	0.0366		ug/L		73	54 - 138
beta-BHC	0.0500	0.0435		ug/L		87	56 - 136
4,4'-DDD	0.0500	0.0492		ug/L		98	56 - 143
4,4'-DDE	0.0500	0.0278	Q	ug/L		56	57 - 135
4,4'-DDT	0.0500	0.0598		ug/L		120	51 - 143
delta-BHC	0.0500	0.0445		ug/L		89	52 - 142
Dieldrin	0.0500	0.0453		ug/L		91	60 - 136
Endosulfan I	0.0500	0.0362		ug/L		72	62 - 126
Endosulfan II	0.0500	0.0477		ug/L		95	52 - 135
Endosulfan sulfate	0.0500	0.0476		ug/L		95	62 - 133
Endrin	0.0500	0.0475		ug/L		95	60 - 138
Endrin aldehyde	0.0500	0.0550		ug/L		110	51 - 132
Endrin ketone	0.0500	0.0509		ug/L		102	58 - 134
gamma-BHC (Lindane)	0.0500	0.0401		ug/L		80	59 - 134
Heptachlor	0.0500	0.0198	J Q	ug/L		40	54 - 130
Heptachlor epoxide	0.0500	0.0371		ug/L		74	61 - 133
Methoxychlor	0.0500	0.0592		ug/L		118	54 - 145

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCS 680-566463/19-A
Matrix: Water
Analysis Batch: 568193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 566463

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	83		14 - 130
Tetrachloro-m-xylene	52		44 - 124

Lab Sample ID: 680-167491-3 MS
Matrix: Water
Analysis Batch: 568193

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA
Prep Batch: 566463

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.0086	U Q	0.0525	0.0316		ug/L		60	45 - 134
alpha-BHC	0.0048	U	0.0525	0.0338		ug/L		64	54 - 138
beta-BHC	0.0086	U	0.0525	0.0409		ug/L		78	56 - 136
4,4'-DDD	0.0048	U M	0.0525	0.0427		ug/L		81	56 - 143
4,4'-DDE	0.0048	U Q	0.0525	0.0389		ug/L		74	57 - 135
4,4'-DDT	0.0086	U	0.0525	0.0503		ug/L		96	51 - 143
delta-BHC	0.0086	U	0.0525	0.0432		ug/L		82	52 - 142
Dieldrin	0.0048	U	0.0525	0.0462		ug/L		88	60 - 136
Endosulfan I	0.0048	U	0.0525	0.0365		ug/L		69	62 - 126
Endosulfan II	0.0048	U	0.0525	0.0420		ug/L		80	52 - 135
Endosulfan sulfate	0.0048	U	0.0525	0.0398		ug/L		76	62 - 133
Endrin	0.0048	U	0.0525	0.0457	M	ug/L		87	60 - 138
Endrin aldehyde	0.0048	U M	0.0525	0.0437		ug/L		83	51 - 132
Endrin ketone	0.0048	U M	0.0525	0.0404		ug/L		77	58 - 134
gamma-BHC (Lindane)	0.0048	U M	0.0525	0.0370		ug/L		70	59 - 134
Heptachlor	0.0086	U Q	0.0525	0.0331		ug/L		63	54 - 130
Heptachlor epoxide	0.0048	U	0.0525	0.0403		ug/L		77	61 - 133
Methoxychlor	0.0086	U	0.0525	0.0478		ug/L		91	54 - 145

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl	43		14 - 130
Tetrachloro-m-xylene	42	Q	44 - 124

Lab Sample ID: 680-167491-3 MSD
Matrix: Water
Analysis Batch: 568193

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA
Prep Batch: 566463

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin	0.0086	U Q	0.0492	0.0576	J1	ug/L		117	45 - 134	58	30
alpha-BHC	0.0048	U	0.0492	0.0364		ug/L		74	54 - 138	8	30
beta-BHC	0.0086	U	0.0492	0.0509		ug/L		103	56 - 136	22	30
4,4'-DDD	0.0048	U M	0.0492	0.0404		ug/L		82	56 - 143	5	30
4,4'-DDE	0.0048	U Q	0.0492	0.0361		ug/L		73	57 - 135	8	30
4,4'-DDT	0.0086	U	0.0492	0.0457		ug/L		93	51 - 143	9	30
delta-BHC	0.0086	U	0.0492	0.0482		ug/L		98	52 - 142	11	30
Dieldrin	0.0048	U	0.0492	0.0438	M	ug/L		89	60 - 136	5	30
Endosulfan I	0.0048	U	0.0492	0.0350		ug/L		71	62 - 126	4	30
Endosulfan II	0.0048	U	0.0492	0.0403		ug/L		82	52 - 135	4	30
Endosulfan sulfate	0.0048	U	0.0492	0.0378		ug/L		77	62 - 133	5	30
Endrin	0.0048	U	0.0492	0.0442	M	ug/L		90	60 - 138	3	30

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: 680-167491-3 MSD
Matrix: Water
Analysis Batch: 568193

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA
Prep Batch: 566463

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Endrin aldehyde	0.0048	U M	0.0492	0.0426		ug/L		87	51 - 132	3	30
Endrin ketone	0.0048	U M	0.0492	0.0380		ug/L		77	58 - 134	6	30
gamma-BHC (Lindane)	0.0048	U M	0.0492	0.0399		ug/L		81	59 - 134	7	30
Heptachlor	0.0086	U Q	0.0492	0.0446		ug/L		91	54 - 130	30	30
Heptachlor epoxide	0.0048	U	0.0492	0.0389		ug/L		79	61 - 133	4	30
Methoxychlor	0.0086	U	0.0492	0.0442		ug/L		90	54 - 145	8	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*39*		*14 - 130*
Tetrachloro-m-xylene	*47*		*44 - 124*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 680-568055/22
Matrix: Water
Analysis Batch: 568055

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	0.50	U	0.50	0.50	0.20	mg/L		04/26/19 14:19	1
Sulfate	1.0	U	1.0	1.0	0.40	mg/L		04/26/19 14:19	1

Lab Sample ID: LCS 680-568055/20
Matrix: Water
Analysis Batch: 568055

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.0		mg/L		100	87 - 111
Sulfate	10.0	10.3		mg/L		103	87 - 112

Lab Sample ID: LCSD 680-568055/21
Matrix: Water
Analysis Batch: 568055

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	10.0		mg/L		100	87 - 111	0	15
Sulfate	10.0	10.3		mg/L		103	87 - 112	0	15

Lab Sample ID: 680-167491-3 MS
Matrix: Water
Analysis Batch: 568055

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	180	D	50.0	223	D	mg/L		93	87 - 111
Sulfate	20	D	50.0	70.8	D	mg/L		103	87 - 112

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 680-167491-3 MSD
Matrix: Water
Analysis Batch: 568055

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	180	D	50.0	226	D	mg/L		101	87 - 111	2	15
Sulfate	20	D	50.0	72.6	D	mg/L		106	87 - 112	3	15

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-566774/1-A
Matrix: Water
Analysis Batch: 572973

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 566774

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	5.0	U	10	5.0	1.7	ug/L		06/04/19 00:48	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		06/04/19 00:48	1
Chromium	4.0	U	10	4.0	1.6	ug/L		06/04/19 00:48	1
Copper	5.0	U	20	5.0	1.8	ug/L		06/04/19 00:48	1
Iron	50	U	50	50	17	ug/L		06/04/19 00:48	1
Lead	10	U	10	10	3.9	ug/L		06/04/19 00:48	1
Manganese	3.0	U	10	3.0	1.0	ug/L		06/04/19 00:48	1
Selenium	20	U	20	20	9.9	ug/L		06/04/19 00:48	1
Silver	1.5	U	10	1.5	0.60	ug/L		06/04/19 00:48	1

Lab Sample ID: LCS 680-566774/2-A
Matrix: Water
Analysis Batch: 572973

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 566774

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	100	105		ug/L		105	88 - 113
Cadmium	50.0	52.4		ug/L		105	88 - 113
Chromium	100	105		ug/L		105	90 - 113
Copper	100	101		ug/L		101	86 - 114
Iron	5000	5120		ug/L		102	87 - 115
Lead	500	514		ug/L		103	86 - 113
Manganese	400	415		ug/L		104	90 - 114
Selenium	100	111		ug/L		111	83 - 114
Silver	50.0	51.9		ug/L		104	84 - 115

Lab Sample ID: 680-167491-3 MS
Matrix: Water
Analysis Batch: 572973

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA
Prep Batch: 566774

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	5.8	J	100	110		ug/L		105	88 - 113
Cadmium	3.0	U	50.0	51.8		ug/L		104	88 - 113
Chromium	4.0	U	100	104		ug/L		104	90 - 113
Copper	5.0	U	100	100		ug/L		100	86 - 114
Iron	50	U	5000	5070		ug/L		101	87 - 115
Lead	10	U	500	506		ug/L		101	86 - 113
Manganese	3.0	U	400	410		ug/L		103	90 - 114
Selenium	20	U	100	99.3		ug/L		99	83 - 114
Silver	1.5	U	50.0	52.8		ug/L		106	84 - 115

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 680-167491-3 MSD
Matrix: Water
Analysis Batch: 572973

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA
Prep Batch: 566774

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	5.8	J	100	111		ug/L		105	88 - 113	0	20
Cadmium	3.0	U	50.0	52.3		ug/L		105	88 - 113	1	20
Chromium	4.0	U	100	106		ug/L		106	90 - 113	2	20
Copper	5.0	U	100	102		ug/L		102	86 - 114	2	20
Iron	50	U	5000	5150		ug/L		103	87 - 115	2	20
Lead	10	U	500	515		ug/L		103	86 - 113	2	20
Manganese	3.0	U	400	416		ug/L		104	90 - 114	1	20
Selenium	20	U	100	110		ug/L		110	83 - 114	10	20
Silver	1.5	U	50.0	53.1		ug/L		106	84 - 115	1	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-566772/1-A
Matrix: Water
Analysis Batch: 567081

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 566772

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		04/18/19 14:20	1

Lab Sample ID: LCS 680-566772/2-A
Matrix: Water
Analysis Batch: 567081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 566772

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	104		ug/L		104	84 - 116

Lab Sample ID: 680-167491-3 MS
Matrix: Water
Analysis Batch: 567081

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA
Prep Batch: 566772

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	3.0	U	100	98.5		ug/L		99	84 - 116

Lab Sample ID: 680-167491-3 MSD
Matrix: Water
Analysis Batch: 567081

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA
Prep Batch: 566772

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.0	U	100	95.2		ug/L		95	84 - 116	3	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-567103/13-A
Matrix: Water
Analysis Batch: 567317

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 567103

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		04/20/19 12:44	1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 680-567103/14-A
Matrix: Water
Analysis Batch: 567317

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 567103

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			2.50	2.15		ug/L		86	80 - 124		

Lab Sample ID: 680-167491-3 MS
Matrix: Water
Analysis Batch: 567317

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA
Prep Batch: 567103

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	0.20	U	1.00	1.02		ug/L		102	80 - 124		

Lab Sample ID: 680-167491-3 MSD
Matrix: Water
Analysis Batch: 567317

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA
Prep Batch: 567103

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.20	U	1.00	1.06		ug/L		106	80 - 124	4	20

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 280-455013/22
Matrix: Water
Analysis Batch: 455013

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	0.050	U	0.10	0.050	0.019	mg/L		04/17/19 17:19	1

Lab Sample ID: LCS 280-455013/21
Matrix: Water
Analysis Batch: 455013

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Nitrate/Nitrite-N			5.00	5.09		mg/L		102	90 - 110		

Lab Sample ID: 680-167491-3 MS
Matrix: Water
Analysis Batch: 455013

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Nitrate/Nitrite-N	0.28		4.00	4.29		mg/L		100	90 - 110		

Lab Sample ID: 680-167491-3 MSD
Matrix: Water
Analysis Batch: 455013

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate/Nitrite-N	0.28		4.00	4.25		mg/L		99	90 - 110	1	10

Method: 410.4 - COD

Lab Sample ID: MB 280-455069/5
Matrix: Water
Analysis Batch: 455069

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand	20	U	20	20	8.7	mg/L		04/18/19 08:41	1

Lab Sample ID: LCS 280-455069/3
Matrix: Water
Analysis Batch: 455069

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	100	99.7		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-455069/4
Matrix: Water
Analysis Batch: 455069

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	100	101		mg/L		101	90 - 110	2	11

Lab Sample ID: 680-167491-3 MS
Matrix: Water
Analysis Batch: 455069

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	20	U	50.0	54.0		mg/L		108	90 - 110

Lab Sample ID: 680-167491-3 MSD
Matrix: Water
Analysis Batch: 455069

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	20	U	50.0	55.1		mg/L		110	90 - 110	2	11

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-567032/1-A
Matrix: Water
Analysis Batch: 567128

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 567032

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		04/19/19 11:01	1

Lab Sample ID: LCS 680-567032/2-A
Matrix: Water
Analysis Batch: 567128

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 567032

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0475		mg/L		95	83 - 116

Method: 9012B - Cyanide, Total and/or Amenable (Continued)

Lab Sample ID: 680-167491-3 MS
Matrix: Water
Analysis Batch: 567128

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA
Prep Batch: 567032

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0050	U	0.0500	0.0527		mg/L		105	83 - 116

Lab Sample ID: 680-167491-3 MSD
Matrix: Water
Analysis Batch: 567128

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA
Prep Batch: 567032

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	0.0050	U	0.0500	0.0514		mg/L		103	83 - 116	2	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-455053/31
Matrix: Water
Analysis Batch: 455053

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	10	U	10	10	3.1	mg/L		04/17/19 20:56	1

Lab Sample ID: LCS 280-455053/30
Matrix: Water
Analysis Batch: 455053

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	198		mg/L		99	89 - 109

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-454821/1
Matrix: Water
Analysis Batch: 454821

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	10	U	10	10	4.7	mg/L		04/16/19 16:41	1

Lab Sample ID: LCS 280-454821/2
Matrix: Water
Analysis Batch: 454821

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	502	499		mg/L		99	93 - 110

Lab Sample ID: 680-167491-3 DU
Matrix: Water
Analysis Batch: 454821

Client Sample ID: LFM-99-02B_SPR19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	390		392		mg/L		0.5	10

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: MB 280-454980/1
Matrix: Water
Analysis Batch: 454980

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	10	U	10	10	4.7	mg/L		04/17/19 13:55	1

Lab Sample ID: LCS 280-454980/2
Matrix: Water
Analysis Batch: 454980

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	502	481		mg/L		96	93 - 110

QC Association Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens DCL

Job ID: 680-167491-1

GC Semi VOA

Prep Batch: 566463

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	3520C	
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	3520C	
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	3520C	
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	3520C	
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	3520C	
MB 680-566463/18-A	Method Blank	Total/NA	Water	3520C	
LCS 680-566463/19-A	Lab Control Sample	Total/NA	Water	3520C	
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	3520C	
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	3520C	

Analysis Batch: 568193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	8081B 8082A	566463
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	8081B 8082A	566463
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	8081B 8082A	566463
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	8081B 8082A	566463
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	8081B 8082A	566463
MB 680-566463/18-A	Method Blank	Total/NA	Water	8081B 8082A	566463
LCS 680-566463/19-A	Lab Control Sample	Total/NA	Water	8081B 8082A	566463
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	8081B 8082A	566463
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	8081B 8082A	566463

HPLC/IC

Analysis Batch: 568055

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	9056A	
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	9056A	
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	9056A	
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	9056A	
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	9056A	
MB 680-568055/22	Method Blank	Total/NA	Water	9056A	
LCS 680-568055/20	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-568055/21	Lab Control Sample Dup	Total/NA	Water	9056A	
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	9056A	
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	9056A	

Metals

Prep Batch: 566772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	3010A	
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	3010A	
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	3010A	
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	3010A	
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	3010A	
MB 680-566772/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-566772/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	3010A	
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	3010A	

Metals

Prep Batch: 566774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	3010A	
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	3010A	
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	3010A	
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	3010A	
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	3010A	
MB 680-566774/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-566774/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	3010A	
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	3010A	

Analysis Batch: 567081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	6020A	566772
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	6020A	566772
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	6020A	566772
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	6020A	566772
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	6020A	566772
MB 680-566772/1-A	Method Blank	Total/NA	Water	6020A	566772
LCS 680-566772/2-A	Lab Control Sample	Total/NA	Water	6020A	566772
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	6020A	566772
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	6020A	566772

Prep Batch: 567103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	7470A	
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	7470A	
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	7470A	
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	7470A	
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	7470A	
MB 680-567103/13-A	Method Blank	Total/NA	Water	7470A	
LCS 680-567103/14-A	Lab Control Sample	Total/NA	Water	7470A	
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	7470A	
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	7470A	

Analysis Batch: 567317

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	7470A	567103
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	7470A	567103
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	7470A	567103
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	7470A	567103
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	7470A	567103
MB 680-567103/13-A	Method Blank	Total/NA	Water	7470A	567103
LCS 680-567103/14-A	Lab Control Sample	Total/NA	Water	7470A	567103
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	7470A	567103
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	7470A	567103

Analysis Batch: 572973

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	6010C	566774
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	6010C	566774
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	6010C	566774

Metals (Continued)

Analysis Batch: 572973 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	6010C	566774
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	6010C	566774
MB 680-566774/1-A	Method Blank	Total/NA	Water	6010C	566774
LCS 680-566774/2-A	Lab Control Sample	Total/NA	Water	6010C	566774
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	6010C	566774
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	6010C	566774

General Chemistry

Analysis Batch: 454821

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	SM 2540C	
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	SM 2540C	
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	SM 2540C	
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	SM 2540C	
MB 280-454821/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-454821/2	Lab Control Sample	Total/NA	Water	SM 2540C	
680-167491-3 DU	LFM-99-02B_SPR19	Total/NA	Water	SM 2540C	

Analysis Batch: 454980

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	SM 2540C	
MB 280-454980/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-454980/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 455013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	353.2	
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	353.2	
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	353.2	
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	353.2	
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	353.2	
MB 280-455013/22	Method Blank	Total/NA	Water	353.2	
LCS 280-455013/21	Lab Control Sample	Total/NA	Water	353.2	
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	353.2	
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	353.2	

Analysis Batch: 455053

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	SM 2320B	
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	SM 2320B	
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	SM 2320B	
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	SM 2320B	
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	SM 2320B	
MB 280-455053/31	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-455053/30	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 455069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	410.4	
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	410.4	

General Chemistry (Continued)

Analysis Batch: 455069 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	410.4	
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	410.4	
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	410.4	
MB 280-455069/5	Method Blank	Total/NA	Water	410.4	
LCS 280-455069/3	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-455069/4	Lab Control Sample Dup	Total/NA	Water	410.4	
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	410.4	
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	410.4	

Prep Batch: 567032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	9012B	
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	9012B	
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	9012B	
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	9012B	
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	9012B	
MB 680-567032/1-A	Method Blank	Total/NA	Water	9012B	
LCS 680-567032/2-A	Lab Control Sample	Total/NA	Water	9012B	
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	9012B	
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	9012B	

Analysis Batch: 567128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-167491-1	LFM-03-07_SPR19	Total/NA	Water	9012B	567032
680-167491-3	LFM-99-02B_SPR19	Total/NA	Water	9012B	567032
680-167491-4	LFM-99-05A_SPR19	Total/NA	Water	9012B	567032
680-167491-5	LFM-DUP01_SPR19	Total/NA	Water	9012B	567032
680-167491-6	LFM-99-06ARP_SPR19	Total/NA	Water	9012B	567032
MB 680-567032/1-A	Method Blank	Total/NA	Water	9012B	567032
LCS 680-567032/2-A	Lab Control Sample	Total/NA	Water	9012B	567032
680-167491-3 MS	LFM-99-02B_SPR19	Total/NA	Water	9012B	567032
680-167491-3 MSD	LFM-99-02B_SPR19	Total/NA	Water	9012B	567032

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens DCL

Job ID: 680-167491-1

Client Sample ID: LFM-03-07_SPR19

Lab Sample ID: 680-167491-1

Date Collected: 04/10/19 08:40

Matrix: Water

Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			979.7 mL	5 mL	566463	04/16/19 14:28	WGG	TAL SAV
Total/NA	Analysis	8081B 8082A		1			568193	04/28/19 00:09	JCK	TAL SAV
	Instrument ID: CSGK									
Total/NA	Analysis	9056A		5	5 mL	5 mL	568055	04/26/19 17:44	SMP	TAL SAV
	Instrument ID: CICK									
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6010C		1			572973	06/04/19 01:31	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 15:20	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	567103	04/19/19 09:55	PEP	TAL SAV
Total/NA	Analysis	7470A		1			567317	04/20/19 13:49	BCB	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	455013	04/17/19 17:27	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	455069	04/18/19 08:41	LPL	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	567032	04/19/19 05:21	DAM	TAL SAV
Total/NA	Analysis	9012B		1			567128	04/19/19 11:22	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			455053	04/17/19 21:22	SGB	TAL DEN
	Instrument ID: WC_AT2									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	454980	04/17/19 13:55	ARM	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-99-02B_SPR19

Lab Sample ID: 680-167491-3

Date Collected: 04/10/19 10:50

Matrix: Water

Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1041.3 mL	5 mL	566463	04/16/19 14:28	WGG	TAL SAV
Total/NA	Analysis	8081B 8082A		1			568193	04/28/19 00:25	JCK	TAL SAV
	Instrument ID: CSGK									
Total/NA	Analysis	9056A		5	5 mL	5 mL	568055	04/26/19 16:16	SMP	TAL SAV
	Instrument ID: CICK									
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6010C		1			572973	06/04/19 00:58	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 14:28	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	567103	04/19/19 09:55	PEP	TAL SAV
Total/NA	Analysis	7470A		1			567317	04/20/19 13:53	BCB	TAL SAV
	Instrument ID: LEEMAN2									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens DCL

Job ID: 680-167491-1

Client Sample ID: LFM-99-02B_SPR19

Lab Sample ID: 680-167491-3

Date Collected: 04/10/19 10:50

Matrix: Water

Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	353.2		1	100 mL	100 mL	455013	04/17/19 17:21	SVC	TAL DEN
Total/NA	Analysis	410.4		1	2 mL	2 mL	455069	04/18/19 08:41	LPL	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	567032	04/19/19 05:21	DAM	TAL SAV
Total/NA	Analysis	9012B		1			567128	04/19/19 11:23	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			455053	04/17/19 21:28	SGB	TAL DEN
	Instrument ID: WC_AT2									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	454821	04/16/19 16:41	ARM	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-99-05A_SPR19

Lab Sample ID: 680-167491-4

Date Collected: 04/09/19 13:12

Matrix: Water

Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			972.9 mL	5 mL	566463	04/16/19 14:28	WGG	TAL SAV
Total/NA	Analysis	8081B 8082A		1			568193	04/28/19 00:41	JCK	TAL SAV
	Instrument ID: CSGK									
Total/NA	Analysis	9056A		5	5 mL	5 mL	568055	04/26/19 17:57	SMP	TAL SAV
	Instrument ID: CICK									
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 14:01	AJR	TAL SAV
Total/NA	Analysis	6010C		1			572973	06/04/19 01:45	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 14:00	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 16:07	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	567103	04/19/19 09:55	PEP	TAL SAV
Total/NA	Analysis	7470A		1			567317	04/20/19 14:19	BCB	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	455013	04/17/19 17:29	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	455069	04/18/19 08:41	LPL	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	567032	04/19/19 05:21	DAM	TAL SAV
Total/NA	Analysis	9012B		1			567128	04/19/19 11:26	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			455053	04/17/19 21:35	SGB	TAL DEN
	Instrument ID: WC_AT2									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	454821	04/16/19 16:41	ARM	TAL DEN
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens DCL

Job ID: 680-167491-1

Client Sample ID: LFM-DUP01_SPR19

Lab Sample ID: 680-167491-5

Date Collected: 04/09/19 13:17
Matrix: Water
Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			996 mL	5 mL	566463	04/16/19 14:28	WGG	TAL SAV
Total/NA	Analysis	8081B 8082A		1			568193	04/28/19 00:57	JCK	TAL SAV
	Instrument ID: CSGK									
Total/NA	Analysis	9056A		5	5 mL	5 mL	568055	04/26/19 18:10	SMP	TAL SAV
	Instrument ID: CICK									
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6010C		1			572973	06/04/19 01:35	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 13:53	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 15:59	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	567103	04/19/19 09:55	PEP	TAL SAV
Total/NA	Analysis	7470A		1			567317	04/20/19 14:12	BCB	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	455013	04/17/19 17:31	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	455069	04/18/19 08:41	LPL	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			50 mL	50 mL	567032	04/19/19 05:21	DAM	TAL SAV
Total/NA	Analysis	9012B		1			567128	04/19/19 11:27	DAM	TAL SAV
	Instrument ID: LACHAT1									
Total/NA	Analysis	SM 2320B		1			455053	04/17/19 21:42	SGB	TAL DEN
	Instrument ID: WC_AT2									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	454821	04/16/19 16:41	ARM	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-99-06ARP_SPR19

Lab Sample ID: 680-167491-6

Date Collected: 04/10/19 08:35
Matrix: Water
Date Received: 04/12/19 10:27

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1037.6 mL	5 mL	566463	04/16/19 14:28	WGG	TAL SAV
Total/NA	Analysis	8081B 8082A		1			568193	04/28/19 01:13	JCK	TAL SAV
	Instrument ID: CSGK									
Total/NA	Analysis	9056A		5	5 mL	5 mL	568055	04/26/19 18:22	SMP	TAL SAV
	Instrument ID: CICK									
Total/NA	Prep	3010A			50 mL	50 mL	566774	04/17/19 14:01	AJR	TAL SAV
Total/NA	Analysis	6010C		1			572973	06/04/19 01:40	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	566772	04/17/19 14:00	AJR	TAL SAV
Total/NA	Analysis	6020A		1			567081	04/18/19 16:03	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	567103	04/19/19 09:55	PEP	TAL SAV
Total/NA	Analysis	7470A		1			567317	04/20/19 14:16	BCB	TAL SAV
	Instrument ID: LEEMAN2									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens DCL

Job ID: 680-167491-1

Client Sample ID: LFM-99-06ARP_SPR19

Date Collected: 04/10/19 08:35
Date Received: 04/12/19 10:27

Lab Sample ID: 680-167491-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	353.2		1	100 mL	100 mL	455013	04/17/19 17:33	SVC	TAL DEN
Total/NA	Analysis	410.4		1	2 mL	2 mL	455069	04/18/19 08:41	LPL	TAL DEN
	Instrument ID:	WC_Genesys20								
Total/NA	Prep	9012B			50 mL	50 mL	567032	04/19/19 05:21	DAM	TAL SAV
Total/NA	Analysis	9012B		1			567128	04/19/19 11:28	DAM	TAL SAV
	Instrument ID:	LACHAT1								
Total/NA	Analysis	SM 2320B		1			455053	04/17/19 21:50	SGB	TAL DEN
	Instrument ID:	WC_AT2								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	454821	04/16/19 16:41	ARM	TAL DEN
	Instrument ID:	NOEQUIP								

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
SN3545-1, 2, 3, 4, 5 & 6

Matrices: Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No)
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: _____ **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 05/02/2019

TEST AMERICA SAVANNAH
LONG TERM MONITORING,
DCL SPRING 2019
SM3545

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
LONG TERM MONITORING, DCL SPRING 2019
SM3545

Sample Receipt

The following samples were received on April 12, 2019 and were logged in under Katahdin Analytical Services work order number SM3545 for a hardcopy due date of April 30, 2019.

KATAHDIN Sample No.	TEST AMERICA SAVANNAH Sample Identification
SM3545-1	LFM-TRIPBLANK_SPR19
SM3545-2	LFM-03-07_SPR19
SM3545-3	LFM-99-05A_SPR19
SM3545-4	LFM-DUP01_SPR19
SM3545-5	LFM-99-06ARP_SPR19
SM3545-6	LFM-99-02B_SPR19

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of work order SM3545 were analyzed in accordance with Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, and/or Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample SM3545-6 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as per client request.

MA-VPH Analysis

Samples SM3545-2 and 4 had low recoveries for the surrogate 2,5-dibromotoluene on the PID and/or the FID which were outside of the method acceptance limits. The samples were reanalyzed within hold time and sample SM3545-2RA had a low surrogate recovery on the PID, while sample SM3545-4RA had acceptable surrogate recoveries. The method blank WG251381-1 associated with the reanalyzed samples had low recoveries for the surrogate 2,5-dibromotoluene on the PID and FID. The results for both analyses are reported.

MA-EPH Analysis

Samples SM3545-3RE and 4RE were manually integrated for 2-fluorobiphenyl or 5-alpha androstane. The specific reasons for the manual integrations are indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond 05.02.19

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC. Sample Receipt Condition Report

Client: TA / Koman	KAS PM: HMM	Sampled By: Client
Project:	KIMS Entry By: SO	Delivered By: Fedex
KAS Work Order#: 575545-3547	KIMS Review By: HMM	Received By: JCB
SDG #:	Cooler: 1 of 2	Date/Time Rec.: 4/12/19 935

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.6
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client:	TA / Koman	KAS PM:	HHM	Sampled By:	Client
Project:		KIMS Entry By:	SO	Delivered By:	Fedex
KAS Work Order#:	580345-3547	KIMS Review By:	HHM	Received By:	JCB
SDG #:		Cooler: 2 of 2		Date/Time Rec.:	4-12-19 935

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.8
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment: Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

360325-Boston

COC # 041019-DCL

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments: SM3545

Equipment:

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
2	2* 1 Liter, amber, glass,
21	1* 2-1 Liter, amber, glass,
4	3* 40mL glass VOA Vials,
46	1* 250mL, plastic,
47	1* 500mL, amber glass,
48	1* 250mL plastic,
49	1* 500mL plastic,
5	1* 125mL plastic,
6	1* 125mL, plastic,
9	1* 250mL, plastic,
HIDE	*,

Analytical Test Method

Event: KOMAN, Long Term Monitoring, DCL Spring 2019

	A2320B - Alkalinity	A2540C - TDS	E353.2 - Nitrite Nitrate as N	E410.4 - COD	MADEPEP - EPH with PAHs	MADEPVP - VPH with targets	SW6010C - Ba Cd Cr Cu Fe Pb Mn Se Ag	SW6020A - As	SW7470A - Mercury	SW8081B - Pesticides	SW9012B - Cyanide	SW9056A - Cl SO4
	46	49	47	6	2	4	9	9	9	21	48	5

	Sample ID	Matrix	Date	Time	Samp Init.	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
1	LFM-TRIP BLANK_SPR19	WQ				FIELDQC	TB1	0.00	0.00
2	LFM-03-07_SPR19	WG	4/9/19	0840	SAS	LFM-03-07	N1	10.90	20.90
3	LFM-99-02B_SPR19	WG	4/10/19	1050		LFM-99-02B MS/MSD	N1	14.50	25.83
4	LFM-99-05A_SPR19	WG	*Added by SOS			LFM-99-05A	N1	19.00	29.98
5	LFM-DUP01_SPR19	WG				LFM-99-05A	FD1	19.00	29.98
6	LFM-99-06ARP_SPR19	WG				LFM-99-06ARP	N1	10.09	19.39
7									

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	Date	Time
~~Sarah Sailor~~	~~4/10/2019~~	~~1520~~
~~Sarah Sailor~~	~~4/10/2019~~	~~1520~~
	4-11-19	1100

Received by: *(Signature)*	Date	Time
	4/11-19	1542
	4.12.19	935

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

4.12.19 935

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 041019-DCL

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments:

DCL
Cool to <4°C, on ice

Equipment:

Peristaltic Pump
Teflon tubing

SM3545

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
2	2" 1 Liter, amber, glass, HCl
21	1" 2-1 Liter, amber, glass,
4	3" 40mL glass VOA Vials,
46	1" 250mL, plastic,
47	1" 500mL, amber glass, H_2SO_4
48	1" 250mL plastic, NaOH
49	1" 500mL plastic,
5	1" 125mL plastic,
6	~~1" 125mL, plastic,~~ 1" 500mL amber glass H_2SO_4
9	1" 250mL, plastic, HNO_3
HIDE	*,

Event: KOMAN, Long Term Monitoring, DCL Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init.	A2320B - Alkalinity	A2540C - TDS	E353.2 - Nitrite Nitrate as N	E410.4 - COD	MADEPEP - EPH with PAHs	MADEPVP - VPH with targets	SW6010C - Ba Cd Cr Cu Fe Pb Mn Se Ag	SW6020A - As	SW7470A - Mercury	SW8081B - Pesticides	SW9012B - Cyanide	SW9056A - Cl SO4	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
						46	49	47	6	2	4	9	9	9	21	48	5				
1	LFM-TRIP BLANK_SPR19	WQ	4/10/19	—	B:A						X							FIELDQC	TB1	0.00	0.00
2	~~LFM-03-07_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~LFM-03-07~~	~~N1~~	~~10.90~~	~~20.90~~
3	~~LFM-99-02B_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~LFM-99-02B~~	~~N1~~	~~14.50~~	~~25.83~~
4	LFM-99-05A_SPR19	WG	4/9/19	1312	B:A	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	N1	19.00	29.98
5	LFM-DUP01_SPR19	WG	4/9/19	1317	B:A	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	FD1	19.00	29.98
6	LFM-99-06ARP_SPR19	WG	4/10/19	0835	B:A	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-06ARP	N1	10.09	19.39
7																					
		Turnaround Time: 21 Days																			

Relinquished by: *(Signature)*	Date	Time
Butt Ca	4/10/19	1520
[signature]	4-11-19	1800

Received by: *(Signature)*	Date	Time
[signature]	4-10-19	1520

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

[signature] 4.12.19 935

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Apr. 17, 2019
01:33 PM

Login Number: SM3545

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Quote/Incoming:

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.1 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative. VPH undetect ethylbenzene, see work order SL3114.
CHECK NO.	:	
CLIENT PO#	:	680-167491-1
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	
COOLER TEMPERATURE	:	0.6, 0.8
DELIVERY SERVICES	:	Fedex
EDD FORMAT	:	KAS033QC-XLS
LOGIN INITIALS	:	SO
PM	:	HHM
PROJECT NAME	:	Long Term Monitoring, DCL Spring 2019
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Email PDF, EDD, and invoice to Jerry. No HC.

Laboratory Sample ID	Client Sample Number	Collect Date/Time	SDG ID / SDG STATUS / VERBAL TAT	Receive Date	PR	Verbal Date	Due Date	Mailed
SM3545-1	LFM-TRIPBLANK_SPR19	10-APR-19 00:00		12-APR-19			30-APR-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	24-APR-19	40mL Vial+HCl		

SM3545-2	LFM-03-07_SPR19	10-APR-19 08:40		12-APR-19			30-APR-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	24-APR-19	1L N-Amber Glass		
Aqueous	S	MA-VPH	24-APR-19	40mL Vial+HCl		

SM3545-3	LFM-99-05A_SPR19	09-APR-19 13:12		12-APR-19			30-APR-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	23-APR-19	1L N-Amber Glass		
Aqueous	S	MA-VPH	23-APR-19	40mL Vial+HCl		

SM3545-4	LFM-DUP01_SPR19	09-APR-19 13:17		12-APR-19			30-APR-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	23-APR-19	1L N-Amber Glass		
Aqueous	S	MA-VPH	23-APR-19	40mL Vial+HCl		

SM3545-5	LFM-99-06ARP_SPR19	10-APR-19 08:35		12-APR-19			30-APR-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	24-APR-19	1L N-Amber Glass		
Aqueous	S	MA-VPH	24-APR-19	40mL Vial+HCl		

SM3545-6	LFM-99-02B_SPR19	10-APR-19 10:50		12-APR-19			30-APR-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	24-APR-19	1L N-Amber Glass		MS/MSD
Aqueous	S	MA-VPH	24-APR-19	40mL Vial+HCl		

HHM 4-17-19

Total Samples: ***6*** ***Total Analyses:*** ***11***

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-2RE
Client ID: LFM-03-07_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: CMD2198.D

Sample Date: 10-APR-19
Received Date: 12-APR-19
Extract Date: 23-APR-19
Extracted By: PUR/A
Extraction Method: SW846 3510C
Lab Prep Batch: WG251319

Analysis Date: 25-APR-19
Analyst: AC
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 30-APR-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	110	ug/L	1	100	110	55.	82.
C19-C36 Aliphatics	U	110	ug/L	1	100	110	55.	82.
C11-C22 Aromatics	U	110	ug/L	1	100	110	55.	82.
Naphthalene	U	2.2	ug/L	1	2	2.2	0.99	1.6
2-Methylnaphthalene	U	2.2	ug/L	1	2	2.2	0.88	1.6
Phenanthrene	U	2.2	ug/L	1	2	2.2	0.99	1.6
Acenaphthylene	U	2.2	ug/L	1	2	2.2	0.88	1.6
Acenaphthene	U	2.2	ug/L	1	2	2.2	2.0	2.1
Anthracene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Benzo(a)anthracene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Benzo(a)pyrene	U	2.2	ug/L	1	2	2.2	1.4	1.6
Benzo(b)fluoranthene	U	2.2	ug/L	1	2	2.2	0.88	1.6
Benzo(g,h,i)perylene	U	2.2	ug/L	1	2	2.2	1.4	1.6
Benzo(k)fluoranthene	U	2.2	ug/L	1	2	2.2	1.1	1.6
Chrysene	U	2.2	ug/L	1	2	2.2	0.99	1.6
Dibenzo(a,h)anthracene	U	2.2	ug/L	1	2	2.2	1.3	1.6
Fluoranthene	U	2.2	ug/L	1	2	2.2	0.88	1.6
Fluorene	U	2.2	ug/L	1	2	2.2	0.99	1.6
Indeno(1,2,3-cd)pyrene	U	2.2	ug/L	1	2	2.2	1.5	1.6
Pyrene	U	2.2	ug/L	1	2	2.2	1.2	1.6
5-Alpha Androstane		65.7	%					
o-Terphenyl		71.4	%					
2-Fluorobiphenyl		74.8	%					
2-Bromonaphthalene		76.8	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-3RE
Client ID: LFM-99-05A_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: CMD2199.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 23-APR-19
Extracted By: PUR/A
Extraction Method: SW846 3510C
Lab Prep Batch: WG251319

Analysis Date: 25-APR-19
Analyst: AC
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 30-APR-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	110	ug/L	1	100	110	53.	80.
C19-C36 Aliphatics	U	110	ug/L	1	100	110	53.	80.
C11-C22 Aromatics	U	110	ug/L	1	100	110	53.	80.
Naphthalene	U	2.1	ug/L	1	2	2.1	0.96	1.6
2-Methylnaphthalene	U	2.1	ug/L	1	2	2.1	0.85	1.6
Phenanthrene	U	2.1	ug/L	1	2	2.1	0.96	1.6
Acenaphthylene	U	2.1	ug/L	1	2	2.1	0.85	1.6
Acenaphthene	U	2.1	ug/L	1	2	2.1	1.9	2.0
Anthracene	U	2.1	ug/L	1	2	2.1	1.5	1.6
Benzo(a)anthracene	U	2.1	ug/L	1	2	2.1	1.5	1.6
Benzo(a)pyrene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(b)fluoranthene	U	2.1	ug/L	1	2	2.1	0.85	1.6
Benzo(g,h,i)perylene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(k)fluoranthene	U	2.1	ug/L	1	2	2.1	1.1	1.6
Chrysene	U	2.1	ug/L	1	2	2.1	0.96	1.6
Dibenzo(a,h)anthracene	U	2.1	ug/L	1	2	2.1	1.3	1.6
Fluoranthene	U	2.1	ug/L	1	2	2.1	0.85	1.6
Fluorene	U	2.1	ug/L	1	2	2.1	0.96	1.6
Indeno(1,2,3-cd)pyrene	U	2.1	ug/L	1	2	2.1	1.5	1.6
Pyrene	U	2.1	ug/L	1	2	2.1	1.2	1.6
5-Alpha Androstane		52.7	%					
o-Terphenyl		72.2	%					
2-Fluorobiphenyl		76.4	%					
2-Bromonaphthalene		79.6	%					

600 Technology Way
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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-4RE
Client ID: LFM-DUP01_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: CMD2200.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 23-APR-19
Extracted By: PUR/A
Extraction Method: SW846 3510C
Lab Prep Batch: WG251319

Analysis Date: 25-APR-19
Analyst: AC
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 30-APR-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	76.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	76.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	76.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.91	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.91	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.91	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.91	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		53.5	%					
o-Terphenyl		67.4	%					
2-Fluorobiphenyl		74.0	%					
2-Bromonaphthalene		76.2	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-5RE
Client ID: LFM-99-06ARP_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: CMD2201.D

Sample Date: 10-APR-19
Received Date: 12-APR-19
Extract Date: 23-APR-19
Extracted By: PUR/A
Extraction Method: SW846 3510C
Lab Prep Batch: WG251319

Analysis Date: 25-APR-19
Analyst: AC
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 30-APR-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	76.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	76.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	76.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.91	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.91	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.91	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.91	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		49.9	%					
o-Terphenyl		59.8	%					
2-Fluorobiphenyl		69.1	%					
2-Bromonaphthalene		71.7	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-6RE
Client ID: LFM-99-02B_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: CMD2202.D

Sample Date: 10-APR-19
Received Date: 12-APR-19
Extract Date: 23-APR-19
Extracted By: PUR/A
Extraction Method: SW846 3510C
Lab Prep Batch: WG251319

Analysis Date: 25-APR-19
Analyst: AC
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 30-APR-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	110	ug/L	1	100	110	53.	80.
C19-C36 Aliphatics	U	110	ug/L	1	100	110	53.	80.
C11-C22 Aromatics	U	110	ug/L	1	100	110	53.	80.
Naphthalene	U	2.1	ug/L	1	2	2.1	0.96	1.6
2-Methylnaphthalene	U	2.1	ug/L	1	2	2.1	0.85	1.6
Phenanthrene	U	2.1	ug/L	1	2	2.1	0.96	1.6
Acenaphthylene	U	2.1	ug/L	1	2	2.1	0.85	1.6
Acenaphthene	U	2.1	ug/L	1	2	2.1	1.9	2.0
Anthracene	U	2.1	ug/L	1	2	2.1	1.5	1.6
Benzo(a)anthracene	U	2.1	ug/L	1	2	2.1	1.5	1.6
Benzo(a)pyrene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(b)fluoranthene	U	2.1	ug/L	1	2	2.1	0.85	1.6
Benzo(g,h,i)perylene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(k)fluoranthene	U	2.1	ug/L	1	2	2.1	1.1	1.6
Chrysene	U	2.1	ug/L	1	2	2.1	0.96	1.6
Dibenzo(a,h)anthracene	U	2.1	ug/L	1	2	2.1	1.3	1.6
Fluoranthene	U	2.1	ug/L	1	2	2.1	0.85	1.6
Fluorene	U	2.1	ug/L	1	2	2.1	0.96	1.6
Indeno(1,2,3-cd)pyrene	U	2.1	ug/L	1	2	2.1	1.5	1.6
Pyrene	U	2.1	ug/L	1	2	2.1	1.2	1.6
5-Alpha Androstane		56.7	%					
o-Terphenyl		66.1	%					
2-Fluorobiphenyl		77.0	%					
2-Bromonaphthalene		80.0	%					

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Report of Analytical Results

Client:
Lab ID: WG251319-1
Client ID: Method Blank Sample
Project:
SDG: SM3545
Lab File ID: CMD2193.D

Sample Date:
Received Date:
Extract Date: 23-APR-19
Extracted By: PUR/A
Extraction Method: SW846 3510C
Lab Prep Batch: WG251319

Analysis Date: 24-APR-19
Analyst: AC
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 30-APR-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		50.7	%					
o-Terphenyl		82.1	%					
2-Fluorobiphenyl		89.7	%					
2-Bromonaphthalene		92.0	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Long Term Monitoring, DCL Spring 2019 **Matrix:** AQ
Lab Code: KAS **SDG:** SM3545

Client Sample ID	Lab Sample ID	Col. ID	2BN	#	2FBP	#	5AA	#	OTP	#
LFM-03-07_SPR19	SM3545-2RE	B	76.8		74.8		65.7		71.4	
LFM-99-05A_SPR19	SM3545-3RE	B	79.6		76.4		52.7		72.2	
LFM-DUP01_SPR19	SM3545-4RE	B	76.2		74.0		53.5		67.4	
LFM-99-06ARP_SPR19	SM3545-5RE	B	71.7		69.1		49.9		59.8	
LFM-99-02B_SPR19	SM3545-6RE	B	80.0		77.0		56.7		66.1	
Method Blank Sample	WG251319-1	B	92.0		89.7		50.7		82.1	
Laboratory Control S	WG251319-2	B	75.4		73.0		43.6		70.4	
Laboratory Control S	WG251319-3	B	81.7		78.7		59.7		78.9	
Matrix Spike	WG251319-4	B	93.1		89.7		62.3		89.0	
Matrix Spike Duplica	WG251319-5	B	73.7		70.8		64.8		70.9	

		QC Limits
5AA	5-ALPHA ANDROSTANE	40-140
OTP	O-TERPHENYL	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG251319-2
LCSD ID: WG251319-3
Project:
SDG: SM3545
Report Date: 30-APR-19
LCS File ID: CMD2194.D

Received Date:
Extract Date: 23-APR-19
Extracted By: PUR/A
Extraction Method: SW846 3510C
Lab Prep Batch: WG251319
LCSD File ID: CMD2195.d

Analysis Date: 24-APR-19
Analyst: AC
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	969.	63.3	1090	71.2	ug/L	12	25	40-140
C9-C18 Aliphatics	540.	272.	50.4	314.	58.1	ug/L	14	25	40-140
C19-C36 Aliphatics	720.	354.	49.2	387.	53.8	ug/L	9	25	40-140
Naphthalene	90.0	48.6	54.0	56.4	62.7	ug/L	15	25	40-140
2-Methylnaphthalene	90.0	54.1	60.1	62.5	69.4	ug/L	14	25	40-140
Phenanthrene	90.0	55.2	61.3	62.0	68.9	ug/L	12	25	40-140
Acenaphthylene	90.0	50.1	55.7	57.3	63.7	ug/L	13	25	40-140
Acenaphthene	90.0	49.9	55.4	57.2	63.6	ug/L	14	25	40-140
Anthracene	90.0	53.8	59.8	60.5	67.2	ug/L	12	25	40-140
Benzo(a)anthracene	90.0	56.6	62.9	63.9	71.0	ug/L	12	25	40-140
Benzo(a)pyrene	90.0	57.3	63.7	64.3	71.4	ug/L	12	25	40-140
Benzo(b)fluoranthene	90.0	54.6	60.7	60.8	67.6	ug/L	11	25	40-140
Benzo(g,h,i)perylene	90.0	61.3	68.1	68.2	75.8	ug/L	11	25	40-140
Benzo(k)fluoranthene	90.0	56.9	63.2	64.5	71.7	ug/L	12	25	40-140
Chrysene	90.0	57.6	64.0	64.7	71.9	ug/L	12	25	40-140
Dibenzo(a,h)anthracene	90.0	60.9	67.7	68.4	76.0	ug/L	12	25	40-140
Fluoranthene	90.0	58.6	65.1	65.4	72.7	ug/L	11	25	40-140
Fluorene	90.0	52.0	57.8	58.9	65.4	ug/L	12	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	55.0	61.1	61.5	68.3	ug/L	11	25	40-140
Pyrene	90.0	58.0	64.4	64.8	72.0	ug/L	11	25	40-140
5-Alpha Androstane			43.6		59.7				40-140
o-Terphenyl			70.4		78.9				40-140
2-Fluorobiphenyl			73.0		78.7				40-140
2-Bromonaphthalene			75.4		81.7				40-140

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ANALYTICAL SERVICES

MS/MSD Recovery Report

MS ID: WG251319-4
MSD ID: WG251319-5
Sample ID: SM3545-6
Client ID: LFM-99-02B_SPR19
Project:
SDG: SM3545
MS File ID: CMD2196.D

Received Date:
Extract Date: 23-APR-19
Extracted By: PUR/A
Extraction Method: SW846 3510C
Lab Prep Batch: WG251319
Report Date: 30-APR-19
MSD File ID: CMD2197.d

Analysis Date: 24-APR-19
Analyst: AC
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1760	1740	ug/L	U110	1370	1110	77.9	63.8	21	25	40-140
C9-C18 Aliphatics	621.	614.	ug/L	U110	329	357	53.0	58.2	8	25	40-140
C19-C36 Aliphatics	828.	818.	ug/L	U110	426	428	51.5	52.3	0	25	40-140
Naphthalene	103.	102.	ug/L	U2.1	65.4	58	63.2	56.7	12	25	40-140
2-Methylnaphthalene	103.	102.	ug/L	U2.1	73.8	64.2	71.3	62.8	14	25	40-140
Phenanthrene	103.	102.	ug/L	U2.1	78	62.6	75.4	61.2	22	25	40-140
Acenaphthylene	103.	102.	ug/L	U2.1	68.9	58.2	66.6	56.9	17	25	40-140
Acenaphthene	103.	102.	ug/L	U2.1	68.8	58.4	66.5	57.1	16	25	40-140
Anthracene	103.	102.	ug/L	U2.1	76	61	73.5	59.6	22	25	40-140
Benzo(a)anthracene	103.	102.	ug/L	U2.1	81.7	64.1	79.0	62.7	24	25	40-140
Benzo(a)pyrene	103.	102.	ug/L	U2.1	83.1	65.4	80.3	63.9	24	25	40-140
Benzo(b)fluoranthene	103.	102.	ug/L	U2.1	81.5	63.9	78.8	62.5	24	25	40-140
Benzo(g,h,i)perylene	103.	102.	ug/L	U2.1	87.9	67.4	85.0	65.9	26*	25	40-140
Benzo(k)fluoranthene	103.	102.	ug/L	U2.1	79.2	62.3	76.6	60.9	24	25	40-140
Chrysene	103.	102.	ug/L	U2.1	83.4	65.9	80.6	64.4	23	25	40-140
Dibenzo(a,h)anthracene	103.	102.	ug/L	U2.1	85.9	66.1	83.0	64.6	26*	25	40-140
Fluoranthene	103.	102.	ug/L	U2.1	82.3	66	79.6	64.5	22	25	40-140
Fluorene	103.	102.	ug/L	U2.1	73.2	60.2	70.8	58.9	19	25	40-140
Indeno(1,2,3-cd)pyrene	103.	102.	ug/L	U2.1	81.7	62.5	79.0	61.1	27*	25	40-140
Pyrene	103.	102.	ug/L	U2.1	82.1	65.4	79.4	63.9	23	25	40-140
5-Alpha Androstane							62.3	64.8			40-140
o-Terphenyl							89.0	70.9			40-140
2-Fluorobiphenyl							89.7	70.8			40-140
2-Bromonaphthalene							93.1	73.7			40-140

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Spring 2019
Lab File ID : CMD1193.D
Instrument ID : GC12

SDG : SM3545
Lab Sample ID : WG251319-1
Date Analyzed : 24-APR-19
Time Analyzed : 20:41
Date Extracted : 23-APR-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG251319-2	CMD1194.	04/24/19	21:26
Laboratory Control S	WG251319-3	CMD1195.	04/24/19	22:12
Matrix Spike	WG251319-4	CMD1196.	04/24/19	22:57
Matrix Spike Duplica	WG251319-5	CMD1197.	04/24/19	23:43
LFM-03-07_SPR19	SM3545-2RE	CMD1198.	04/25/19	00:29
LFM-99-05A_SPR19	SM3545-3RE	CMD1199.	04/25/19	01:15
LFM-DUP01_SPR19	SM3545-4RE	CMD1200.	04/25/19	02:00
LFM-99-06ARP_SPR19	SM3545-5RE	CMD1201.	04/25/19	02:46
LFM-99-02B_SPR19	SM3545-6RE	CMD1202.	04/25/19	03:31

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Spring 2019
Lab File ID : CMD1193A.D
Instrument ID : GC12

SDG : SM3545
Lab Sample ID : WG251319-1
Date Analyzed : 24-APR-19
Time Analyzed : 20:41
Date Extracted : 23-APR-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG251319-2	CMD1194A	04/24/19	21:26
Laboratory Control S	WG251319-3	CMD1195A	04/24/19	22:12
Matrix Spike	WG251319-4	CMD1196A	04/24/19	22:57
Matrix Spike Duplica	WG251319-5	CMD1197A	04/24/19	23:43
LFM-03-07_SPR19	SM3545-2RE	CMD1198A	04/25/19	00:29
LFM-99-05A_SPR19	SM3545-3RE	CMD1199A	04/25/19	01:15
LFM-DUP01_SPR19	SM3545-4RE	CMD1200A	04/25/19	02:00
LFM-99-06ARP_SPR19	SM3545-5RE	CMD1201A	04/25/19	02:46
LFM-99-02B_SPR19	SM3545-6RE	CMD1202A	04/25/19	03:31

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Spring 2019
Lab File ID : CMD2193.D
Instrument ID : GC12

SDG : SM3545
Lab Sample ID : WG251319-1
Date Analyzed : 24-APR-19
Time Analyzed : 20:41
Date Extracted : 23-APR-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG251319-2	CMD2194.	04/24/19	21:26
Laboratory Control S	WG251319-3	CMD2195.	04/24/19	22:12
Matrix Spike	WG251319-4	CMD2196.	04/24/19	22:57
Matrix Spike Duplica	WG251319-5	CMD2197.	04/24/19	23:43
LFM-03-07_SPR19	SM3545-2RE	CMD2198.	04/25/19	00:29
LFM-99-05A_SPR19	SM3545-3RE	CMD2199.	04/25/19	01:15
LFM-DUP01_SPR19	SM3545-4RE	CMD2200.	04/25/19	02:00
LFM-99-06ARP_SPR19	SM3545-5RE	CMD2201.	04/25/19	02:46
LFM-99-02B_SPR19	SM3545-6RE	CMD2202.	04/25/19	03:31

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SM3545
Project : Long Term Monitoring, DCL Spring 2019 **Instrument ID:** GC12
Lab File IDs : CLI1112.d CLI1098.d CLI1099.d CLI1100.d CLI1115.d **Calibration Date(s):** 11-SEP-18 19:25 12-SEP-18 12:02

	1.0000 Level 1	10.0000 Level 2	50.0000 Level 3	100.0000 Level 4	200.0000 Level 5		New Crv	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	10172	10408	10067	9401	9562		AVG		9922		4.27800	25.00000	M I
Naphthalene	10477	10551	10098	9468	9626		AVG		10044		4.86131	25.00000	O
2-Methylnaphthalene	9300	9616	9181	8583	8747		AVG		9085		4.61648	25.00000	O
Acenaphthylene	10171	10306	9907	9253	9417		AVG		9811		4.69783	25.00000	O
Acenaphthene	10538	10528	10173	9498	9633		AVG		10074		4.85672	25.00000	O
Fluorene	10630	10448	10099	9431	9592		AVG		10040		5.19804	25.00000	O
Phenanthrene	10461	10478	10110	9425	9617		AVG		10018		4.80803	25.00000	O
Anthracene	10239	10528	10111	9408	9649		AVG		9987		4.53856	25.00000	O
Fluoranthene	10446	10570	10188	9463	9679		AVG		10069		4.78231	25.00000	O
Pyrene	10160	10740	10368	9636	9863		AVG		10154		4.24310	25.00000	O
Benzo(a)Anthracene	10582	10446	10196	9565	9743		AVG		10106		4.35563	25.00000	O
Chrysene	10329	10490	10126	9449	9610		AVG		10001		4.52699	25.00000	O
Benzo(b)Fluoranthene	11353	11388	11178	9987	10927		AVG		10967		5.26544	25.00000	O
Benzo(k)Fluoranthene	10089	10151	9590	9377	8656		AVG		9573		6.35400	25.00000	O
Benzo(a)Pyrene	10109	10375	10038	9369	9515		AVG		9882		4.28298	25.00000	O
Indeno(1,2,3-cd)Pyrene	9970	10924	10757	10670	11013		AVG		10667		3.86452	25.00000	O
Dibenzo(a,h)Anthracene	8583	9656	9361	8166	8062		AVG		8765		8.13820	25.00000	O
Benzo(g,h,i)Perylene	9488	9745	9655	9077	9203		AVG		9434		3.04278	25.00000	O
2-Fluorobiphenyl	9010	8985	8602	8051	8217		AVG		8573		5.08650	25.00000	
2-Bromonaphthalene	5480	6079	5914	5535	5621		AVG		5726		4.52066	25.00000	
O-Terphenyl	10323	10200	9877	9238	9363		AVG		9800		4.96302	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SM3545
Project : Long Term Monitoring, DCL Spring 2019 **Instrument ID:** GC12
Lab File IDs : CLI2112.d CLI2098.d CLI2099.d **Calibration Date(s):** 11-SEP-18 19:25
CLI2100.d CLI2115.d 12-SEP-18 12:02

	Level 1	Level 2	Level 3	Level 4	Level 5		Crv					Max	
	1.0000	10.0000	50.0000	100.0000	200.0000		New	b	m1	m2	%RSD	%RSD	
C9-C18 Aliphatic	9601	9391	8680	8500	8636		AVG		8962		5.55234	25.00000	M (
C19-C36 Aliphatic	9353	9694	8679	8683	8654		AVG		9013		5.34323	25.00000	S O
C-9	9481	9284	8826	8293	8620		AVG		8901		5.43857	30.00000	O
C-10	9877	9098	8710	8581	8688		AVG		8991		5.92601	25.00000	O
C-12	9810	9510	8714	8616	8711		AVG		9072		6.04395	25.00000	O
C-14	9456	9469	8611	8521	8625		AVG		8936		5.39321	25.00000	O
C-16	9551	9619	8751	8588	8672		AVG		9036		5.58727	25.00000	O
C-18	9430	9364	8471	8402	8503		AVG		8834		5.83949	25.00000	O
C-19	9136	9696	8779	8723	8797		AVG		9026		4.52155	25.00000	O
C-20	9405	9645	8674	8616	8787		AVG		9025		5.18363	25.00000	O
C-22	9200	9646	8683	8601	8715		AVG		8969		4.96686	25.00000	O
C-24	9664	9682	8591	8576	8450		AVG		8992		6.93501	25.00000	O
C-26	9539	9699	8591	8497	8494		AVG		8964		6.71340	25.00000	O
C-28	9585	9730	8685	8606	8604		AVG		9042		6.24991	25.00000	O
C-30	9639	9788	8709	8699	8632		AVG		9093		6.25907	25.00000	O
C-36	8654	9665	8722	9148	8755		AVG		8989		4.71947	25.00000	O
5-alpha androstane	9395	9602	8650	8392	8405		AVG		8889		6.41719	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Sp
Lab ID : WG251499-1
Lab File ID : CMD1188.d
Initial Calibration Date(s): 09/11/18 19:25 09/12/18 12:02

SDG: SM3545
Analytical Date: 04/24/19 16:53
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	10044	9596	0.010	-4.46136	25.00000	Averaged
60	2-Methylnaphthalene	9085	9140	0.010	0.60715	25.00000	Averaged
70	Phenanthrene	10018	9442	0.010	-5.74852	25.00000	Averaged
80	Acenaphthylene	9811	9450	0.010	-3.67697	25.00000	Averaged
90	Acenaphthene	10074	9680	0.010	-3.90711	25.00000	Averaged
100	Anthracene	9987	9023	0.010	-9.64870	25.00000	Averaged
110	Benzo(a)Anthracene	10106	9236	0.010	-8.61262	25.00000	Averaged
120	Benzo(a)Pyrene	9882	8834	0.010	-10.60423	25.00000	Averaged
130	Benzo(b)Fluoranthene	10967	10136	0.010	-7.57753	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9434	8464	0.010	-10.27413	25.00000	Averaged
150	Benzo(k)Fluoranthene	9573	8572	0.010	-10.45816	25.00000	Averaged
160	Chrysene	10001	9278	0.010	-7.22927	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8765	7370	0.010	-15.91970	25.00000	Averaged
180	Fluoranthene	10069	9411	0.010	-6.53887	25.00000	Averaged
190	Fluorene	10040	9495	0.010	-5.43096	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	10667	9257	0.010	-13.21359	25.00000	Averaged
210	Pyrene	10154	9570	0.010	-5.74875	25.00000	Averaged
4	2-Fluorobiphenyl	8573	9051	0.010	5.57991	25.00000	Averaged
6	2-Bromonaphthalene	5726	6221	0.010	8.64000	25.00000	Averaged
11	O-Terphenyl	9800	10490	0.010	7.04164	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Sp
Lab ID : WG251499-2
Lab File ID : CMD1208.d
Initial Calibration Date(s): 09/11/18 19:25 09/12/18 12:02

SDG: SM3545
Analytical Date: 04/25/19 11:26
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	10044	10870	0.010	8.22103	25.00000	Averaged
60	2-Methylnaphthalene	9085	10303	0.010	13.39920	25.00000	Averaged
70	Phenanthrene	10018	10598	0.010	5.79014	25.00000	Averaged
80	Acenaphthylene	9811	10558	0.010	7.61365	25.00000	Averaged
90	Acenaphthene	10074	10806	0.010	7.26700	25.00000	Averaged
100	Anthracene	9987	10123	0.010	1.36207	25.00000	Averaged
110	Benzo(a)Anthracene	10106	10392	0.010	2.82740	25.00000	Averaged
120	Benzo(a)Pyrene	9882	10329	0.010	4.52543	25.00000	Averaged
130	Benzo(b)Fluoranthene	10967	11372	0.010	3.69964	25.00000	Averaged
140	Benzo(g,h,i)Perylene	9434	10164	0.010	7.74223	25.00000	Averaged
150	Benzo(k)Fluoranthene	9573	9616	0.010	0.45129	25.00000	Averaged
160	Chrysene	10001	10479	0.010	4.77553	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8765	9680	0.010	10.43497	25.00000	Averaged
180	Fluoranthene	10069	10440	0.010	3.68274	25.00000	Averaged
190	Fluorene	10040	10622	0.010	5.79394	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	10667	11965	0.010	12.17245	25.00000	Averaged
210	Pyrene	10154	10544	0.010	3.84359	25.00000	Averaged
4	2-Fluorobiphenyl	8573	10320	0.010	20.38056	25.00000	Averaged
6	2-Bromonaphthalene	5726	7074	0.010	23.53941	25.00000	Averaged
11	O-Terphenyl	9800	11933	0.010	21.76675	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Sp
Lab ID : WG251499-3
Lab File ID : CMD2188.d
Initial Calibration Date(s): 09/11/18 19:25 09/12/18 12:02

SDG: SM3545
Analytical Date: 04/24/19 16:53
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	8962	8640	0.010	-3.59348	25.00000	Averaged
30	C19-C36 Aliphatic	9013	8468	0.010	-6.04030	25.00000	Averaged
370	C-9	8901	8848	0.010	-0.59502	30.00000	Averaged
380	C-10	8991	8880	0.010	-1.23469	25.00000	Averaged
390	C-12	9072	8799	0.010	-3.01515	25.00000	Averaged
400	C-14	8936	8582	0.010	-3.96379	25.00000	Averaged
410	C-16	9036	8468	0.010	-6.28248	25.00000	Averaged
420	C-18	8834	8261	0.010	-6.48482	25.00000	Averaged
430	C-19	9026	8585	0.010	-4.89139	25.00000	Averaged
440	C-20	9025	8529	0.010	-5.49625	25.00000	Averaged
450	C-22	8969	8381	0.010	-6.56135	25.00000	Averaged
460	C-24	8992	8358	0.010	-7.05674	25.00000	Averaged
470	C-26	8964	8330	0.010	-7.06932	25.00000	Averaged
480	C-28	9042	8411	0.010	-6.97825	25.00000	Averaged
490	C-30	9093	8430	0.010	-7.29748	25.00000	Averaged
500	C-36	8989	8722	0.010	-2.96287	25.00000	Averaged
44	5-alpha androstane	8889	9402	0.010	5.77791	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Sp
Lab ID : WG251499-4
Lab File ID : CMD2209.d
Initial Calibration Date(s): 09/11/18 19:25 09/12/18 12:02

SDG: SM3545
Analytical Date: 04/25/19 12:11
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	8962	8442	0.010	-5.80215	25.00000	Averaged
30	C19-C36 Aliphatic	9013	8281	0.010	-8.11736	25.00000	Averaged
370	C-9	8901	8637	0.010	-2.96806	30.00000	Averaged
380	C-10	8991	8733	0.010	-2.86480	25.00000	Averaged
390	C-12	9072	8571	0.010	-5.52748	25.00000	Averaged
400	C-14	8936	8402	0.010	-5.98337	25.00000	Averaged
410	C-16	9036	8266	0.010	-8.52106	25.00000	Averaged
420	C-18	8834	8042	0.010	-8.96481	25.00000	Averaged
430	C-19	9026	8378	0.010	-7.17891	25.00000	Averaged
440	C-20	9025	8324	0.010	-7.77475	25.00000	Averaged
450	C-22	8969	8162	0.010	-8.99796	25.00000	Averaged
460	C-24	8992	8190	0.010	-8.92475	25.00000	Averaged
470	C-26	8964	8250	0.010	-7.96202	25.00000	Averaged
480	C-28	9042	8237	0.010	-8.90703	25.00000	Averaged
490	C-30	9093	8181	0.010	-10.03069	25.00000	Averaged
500	C-36	8989	8527	0.010	-5.14226	25.00000	Averaged
44	5-alpha androstane	8889	9014	0.010	1.40783	25.00000	Averaged

*** = Compound out of QC criteria**

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FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 09/11/18 09/12/18

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.12 S2 : 10.50

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	S2 RT	#
01		WG236385-2	09/11/18	2010	9.12		10.50	
02		WG236385-3	09/11/18	2055	9.12		10.49	
03		WG236385-4	09/11/18	2140	9.12		10.50	
04		WG236385-1	09/12/18	0946	9.14		10.51	
05		WG236385-5	09/12/18	1202	9.12		10.50	
06		WG236385-6	09/12/18	1333				
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 09/11/18 09/12/18

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.41

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG236385-2	09/11/18	2010	15.41	
02		WG236385-3	09/11/18	2055	15.41	
03		WG236385-4	09/11/18	2140	15.41	
04		WG236385-1	09/12/18	0946	15.43	
05		WG236385-5	09/12/18	1202	15.41	
06		WG236385-6	09/12/18	1333		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: SDG No.: SM3545

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 09/11/18 09/12/18

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.12 S2 : 10.49

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01		WG251499-1	04/24/19	1653	9.09		10.46	
02	WG251319-BLA	WG251319-1	04/24/19	2041	9.03		10.40	
03	WG251319-LCS	WG251319-2	04/24/19	2126	9.03		10.40	
04	WG251319-LCS	WG251319-3	04/24/19	2212	9.03		10.40	
05	LFM-99-02B_S	WG251319-4	04/24/19	2257	9.03		10.40	
06	LFM-99-02B_S	WG251319-5	04/24/19	2343	9.03		10.40	
07	LFM-03-07_SP	SM3545-2RE	04/25/19	0029	9.03		10.40	
08	LFM-99-05A_S	SM3545-3RE	04/25/19	0115	9.02		10.39	
09	LFM-DUP01_SP	SM3545-4RE	04/25/19	0200	9.03		10.40	
10	LFM-99-06ARP	SM3545-5RE	04/25/19	0246	9.03		10.40	
11	LFM-99-02B_S	SM3545-6RE	04/25/19	0331	9.03		10.40	
12		WG251499-2	04/25/19	1126	9.12		10.49	
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: SDG No.: SM3545

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 09/11/18 09/12/18

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION S3 : 15.39					
	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG251499-1	04/24/19	1653	15.36	
02	WG251319-BLA	WG251319-1	04/24/19	2041	15.30	
03	WG251319-LCS	WG251319-2	04/24/19	2126	15.30	
04	WG251319-LCS	WG251319-3	04/24/19	2212	15.30	
05	LFM-99-02B_S	WG251319-4	04/24/19	2257	15.30	
06	LFM-99-02B_S	WG251319-5	04/24/19	2343	15.30	
07	LFM-03-07_SP	SM3545-2RE	04/25/19	0029	15.30	
08	LFM-99-05A_S	SM3545-3RE	04/25/19	0115	15.30	
09	LFM-DUP01_SP	SM3545-4RE	04/25/19	0200	15.31	
10	LFM-99-06ARP	SM3545-5RE	04/25/19	0246	15.30	
11	LFM-99-02B_S	SM3545-6RE	04/25/19	0331	15.30	
12		WG251499-2	04/25/19	1126	15.39	
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: SDG No.: SDGA02536

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 09/11/18 09/12/18

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.64

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG236385-8	09/11/18	2010	16.64	
02		WG236385-9	09/11/18	2055	16.64	
03		WG236385-10	09/11/18	2140	16.65	
04		WG236385-7	09/12/18	0946	16.64	
05		WG236385-11	09/12/18	1202	16.64	
06		WG236385-12	09/12/18	1333		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.33 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: SDG No.: SM3545

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 09/11/18 09/12/18

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.49

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S1 RT #
01	ONTINUING CA	WG251499-3	04/24/19	1653	16.49	
02	WG251319-BLA	WG251319-1	04/24/19	2041	16.46	
03	WG251319-LCS	WG251319-2	04/24/19	2126	16.46	
04	WG251319-LCS	WG251319-3	04/24/19	2212	16.47	
05	LFM-99-02B_S	WG251319-4	04/24/19	2257	16.46	
06	LFM-99-02B_S	WG251319-5	04/24/19	2343	16.46	
07	LFM-03-07_SP	SM3545-2RE	04/25/19	0029	16.46	
08	LFM-99-05A_S	SM3545-3RE	04/25/19	0115	16.46	
09	LFM-DUP01_SP	SM3545-4RE	04/25/19	0200	16.46	
10	LFM-99-06ARP	SM3545-5RE	04/25/19	0246	16.46	
11	LFM-99-02B_S	SM3545-6RE	04/25/19	0331	16.46	
12		WG251499-4	04/25/19	1211	16.48	
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.33 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII DRO

Katahdin Analytical Services A000026

Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-1
Client ID: LFM-TRIPBLANK_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: 2MD10136.D

Sample Date: 10-APR-19
Received Date: 12-APR-19
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		74.0	%					
2,5-Dibromotoluene (PID)		71.5	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-2
Client ID: LFM-03-07_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: 2MD10138.D

Sample Date: 10-APR-19
Received Date: 12-APR-19
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		69.6	%					
2,5-Dibromotoluene (PID)	*	68.0	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-2RA
Client ID: LFM-03-07_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: 2MD10188.D

Sample Date: 10-APR-19
Received Date: 12-APR-19
Extract Date: 23-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251381

Analysis Date: 23-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		70.2	%					
2,5-Dibromotoluene (PID)	*	67.0	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-3
Client ID: LFM-99-05A_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: 2MD10139.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		92.9	%					
2,5-Dibromotoluene (PID)		89.7	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-4
Client ID: LFM-DUP01_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: 2MD10140.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)	*	68.6	%					
2,5-Dibromotoluene (PID)	*	66.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-4RA
Client ID: LFM-DUP01_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: 2MD10189.D

Sample Date: 09-APR-19
Received Date: 12-APR-19
Extract Date: 23-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251381

Analysis Date: 23-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		84.1	%					
2,5-Dibromotoluene (PID)		81.7	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-5
Client ID: LFM-99-06ARP_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: 2MD10141.D

Sample Date: 10-APR-19
Received Date: 12-APR-19
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		75.8	%					
2,5-Dibromotoluene (PID)		73.0	%					

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: SM3545-6
Client ID: LFM-99-02B_SPR19
Project: Long Term Monitoring, DCL Spring 20
SDG: SM3545
Lab File ID: 2MD10142.D

Sample Date: 10-APR-19
Received Date: 12-APR-19
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		98.0	%					
2,5-Dibromotoluene (PID)		93.9	%					

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ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG251036-1
Client ID: Method Blank Sample
Project:
SDG: SM3545
Lab File ID: 2MD10133.D

Sample Date:
Received Date:
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		86.2	%					
2,5-Dibromotoluene (PID)		84.8	%					

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ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG251381-1
Client ID: Method Blank Sample
Project:
SDG: SM3545
Lab File ID: 2MD10185.D

Sample Date:
Received Date:
Extract Date: 23-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251381

Analysis Date: 23-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-MAY-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)	*	56.6	%					
2,5-Dibromotoluene (PID)	*	54.1	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Long Term Monitoring, DCL Spring 2019 **Matrix:** AQ
Lab Code: KAS **SDG:** SM3545

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
LFM-TRIPBLANK_SPR19	SM3545-1	B	74.0		71.5	
LFM-03-07_SPR19	SM3545-2	B	69.6		68.0	*
LFM-03-07_SPR19	SM3545-2RA	B	70.2		67.0	*
LFM-99-05A_SPR19	SM3545-3	B	92.9		89.7	
LFM-DUP01_SPR19	SM3545-4	B	68.6	*	66.6	*
LFM-DUP01_SPR19	SM3545-4RA	B	84.1		81.7	
LFM-99-06ARP_SPR19	SM3545-5	B	75.8		73.0	
LFM-99-02B_SPR19	SM3545-6	B	98.0		93.9	
Method Blank Sample	WG251036-1	B	86.2		84.8	
Laboratory Control S	WG251036-2	B	90.4		90.6	
Laboratory Control S	WG251036-3	B	93.4		93.4	
Matrix Spike	WG251036-4	B	73.2		72.5	
Matrix Spike Duplica	WG251036-5	B	73.4		71.8	
Method Blank Sample	WG251381-1	B	56.6	*	54.1	*
Laboratory Control S	WG251381-2	B	87.0		88.9	
Laboratory Control S	WG251381-3	B	86.1		87.1	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG251036-2
LCSD ID: WG251036-3
Project:
SDG: SM3545
Report Date: 01-MAY-19
LCS File ID: 2MD10134.D

Received Date:
Extract Date: 18-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036
LCSD File ID: 2MD10135.D

Analysis Date: 18-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	320.	107.	315.	105.	ug/L	2	25	70-130
C9-C12 Aliphatics	200.	209.	104.	211.	106.	ug/L	1	25	70-130
C9-C10 Aromatics	100.	100.	100.	101.	101.	ug/L	1	25	70-130
Benzene	100.	92.6	92.6	93.8	93.8	ug/L	1	25	70-130
Ethylbenzene	100.	96.2	96.2	97.0	97.0	ug/L	1	25	70-130
Methyl tert-butylether	100.	86.1	86.1	87.2	87.2	ug/L	1	25	70-130
Naphthalene	100.	99.4	99.4	102.	102.	ug/L	2	25	70-130
Toluene	100.	92.7	92.7	93.6	93.6	ug/L	1	25	70-130
m+p-Xylenes	200.	186.	93.0	185.	92.5	ug/L	0	25	70-130
o-Xylene	100.	93.2	93.2	93.6	93.6	ug/L	0	25	70-130
2,5-Dibromotoluene (FID)			90.4		93.4				70-130
2,5-Dibromotoluene (PID)			90.6		93.4				70-130

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LCS/LCSD Recovery Report

LCS ID: WG251381-2
LCSD ID: WG251381-3
Project:
SDG: SM3545
Report Date: 01-MAY-19
LCS File ID: 2MD10186.D

Received Date:
Extract Date: 23-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251381
LCSD File ID: 2MD10187.D

Analysis Date: 23-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	309.	103.	304.	101.	ug/L	2	25	70-130
C9-C12 Aliphatics	200.	210.	105.	204.	102.	ug/L	3	25	70-130
C9-C10 Aromatics	100.	112.	112.	112.	112.	ug/L	0	25	70-130
Benzene	100.	102.	102.	102.	102.	ug/L	0	25	70-130
Ethylbenzene	100.	106.	106.	106.	106.	ug/L	0	25	70-130
Methyl tert-butylether	100.	99.4	99.4	101.	101.	ug/L	2	25	70-130
Naphthalene	100.	116.	116.	117.	117.	ug/L	1	25	70-130
Toluene	100.	102.	102.	102.	102.	ug/L	0	25	70-130
m+p-Xylenes	200.	207.	104.	206.	103.	ug/L	0	25	70-130
o-Xylene	100.	102.	102.	102.	102.	ug/L	0	25	70-130
2,5-Dibromotoluene (FID)			87.0		86.1				70-130
2,5-Dibromotoluene (PID)			88.9		87.1				70-130

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MS/MSD Recovery Report

MS ID: WG251036-4
MSD ID: WG251036-5
Sample ID: SM3545-6
Client ID: LFM-99-02B_SPR19
Project:
SDG: SM3545
MS File ID: 2MD10148.D

Received Date:
Extract Date: 19-APR-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG251036
Report Date: 01-MAY-19
MSD File ID: 2MD10149.D

Analysis Date: 19-APR-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	300.	ug/L	U100	278	280	92.7	93.3	1	50	70-130
C9-C12 Aliphatics	200.	200.	ug/L	U100	160	159	80.0	79.5	1	50	70-130
C9-C10 Aromatics	100.	100.	ug/L	U100	85.8	85.2	85.8	85.2	1	50	70-130
Benzene	100.	100.	ug/L	U3.0	81.7	81.2	81.7	81.2	1	50	70-130
Ethylbenzene	100.	100.	ug/L	U5.0	84	83.6	84.0	83.6	0	50	70-130
Methyl tert-butylether	100.	100.	ug/L	U5.0	73.9	73.1	73.9	73.1	1	50	70-130
Naphthalene	100.	100.	ug/L	U5.0	85.4	85.2	85.4	85.2	0	50	70-130
Toluene	100.	100.	ug/L	U5.0	81.4	81.1	81.4	81.1	0	50	70-130
m+p-Xylenes	200.	200.	ug/L	U10	165	164	82.5	82.0	1	50	70-130
o-Xylene	100.	100.	ug/L	U5.0	80.6	80.1	80.6	80.1	1	50	70-130
2,5-Dibromotoluene (FID)							73.2	73.4			70-130
2,5-Dibromotoluene (PID)							72.5	71.8			70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Spring 2019
Lab File ID : 2MD10133.D
Instrument ID : GC02

SDG : SM3545
Lab Sample ID : WG251036-1
Date Analyzed : 18-APR-19
Time Analyzed : 11:20
Date Extracted : 18-APR-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG251036-2	2MD10134	04/18/19	12:01
Laboratory Control S	WG251036-3	2MD10135	04/18/19	12:43
LFM-TRIPBLANK_SPR19	SM3545-1	2MD10136	04/18/19	18:14
LFM-03-07_SPR19	SM3545-2	2MD10138	04/18/19	19:39
LFM-99-05A_SPR19	SM3545-3	2MD10139	04/18/19	20:22
LFM-DUP01_SPR19	SM3545-4	2MD10140	04/18/19	21:05
LFM-99-06ARP_SPR19	SM3545-5	2MD10141	04/18/19	21:48
LFM-99-02B_SPR19	SM3545-6	2MD10142	04/18/19	22:32
Matrix Spike	WG251036-4	2MD10148	04/19/19	02:51
Matrix Spike Duplica	WG251036-5	2MD10149	04/19/19	03:34

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Spring 2019
Lab File ID : 2MD10185.D
Instrument ID : GC02

SDG : SM3545
Lab Sample ID : WG251381-1
Date Analyzed : 23-APR-19
Time Analyzed : 17:35
Date Extracted : 23-APR-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG251381-2	2MD10186	04/23/19	18:18
Laboratory Control S	WG251381-3	2MD10187	04/23/19	19:01
LFM-03-07_SPR19	SM3545-2RA	2MD10188	04/23/19	19:44
LFM-DUP01_SPR19	SM3545-4RA	2MD10189	04/23/19	20:28

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SM3545
Project : Long Term Monitoring, DCL Spring 2019 **Instrument ID:** GC02
Lab File IDs : 2MC10003.D2MC10004.D2MC10005.D **Calibration Date(s):** 01-MAR-19 16:33
2MC10002.D2MC10006.D2MC10007.D 01-MAR-19 20:00

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Crv					Max	
	1.0000	5.0000	10.0000	50.0000	100.0000	300.0000	New	b	m1	m2	%RSD	%RSD	
C9-C10 Aromatic	3318	3648	3784	3864	3924	3218	AVG		3626		8.10893	25.00000	M (
Methyl tert-butylether	1923	2203	2239	2133	2200	2070	AVG		2128		5.50141	25.00000	O
Benzene	4620	4693	4725	4612	4707	4180	AVG		4590		4.48437	25.00000	O
Toluene	4164	4256	4316	4231	4282	3630	AVG		4146		6.23122	25.00000	O
Ethylbenzene	3398	3578	3696	3696	3739	3156	AVG		3544		6.40148	25.00000	O
m+p-Xylene	4302	4365	4434	4325	4134	3023	AVG		4097		13.06595	25.00000	O
o-Xylene	3606	3743	3806	3748	3765	3248	AVG		3653		5.72936	25.00000	O
1,2,4-trimethylbenzene	3318	3648	3784	3864	3924	3218	AVG		3626		8.10893	25.00000	O
Naphthalene	3229	3716	3889	3980	4200	3326	AVG		3723		10.20792	25.00000	O
2,5-Dibromotoluene (PID)	3256	2996	2973	3072	3380	2850	AVG		3088		6.34165	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SM3545
Project : Long Term Monitoring, DCL Spring 2019 **Instrument ID:** GC02
Lab File IDs : 2MC10003.D2MC10004.D2MC10005.D **Calibration Date(s):** 01-MAR-19 16:33
2MC10002.D2MC10006.D2MC10007.D 01-MAR-19 20:00

	Level 1 1.0000	Level 2 5.0000	Level 3 10.0000	Level 4 50.0000	Level 5 100.0000	Level 6 300.0000	Crv New	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5643	5654	5586	5684	5646	5772	AVG		5664		1.09159	25.00000	M (
C9-C12 Aliphatic	6057	5084	5038	5362	5856	6544	AVG		5657		10.56152	25.00000	M (
n-Pentane	4868	4997	4878	5013	4970	5057	AVG		4964		1.52613	25.00000	O
2-Methylpentane	5610	5740	5632	5720	5692	5758	AVG		5692		1.04754	25.00000	O
Methyl tert-butylether	4025	4468	4339	4187	4312	4172	AVG		4250		3.64060	25.00000	O
2,2,4-Trimethylpentane	6450	6224	6247	6319	6278	6503	AVG		6337		1.79748	25.00000	O
Benzene	7684	7751	7811	7700	7878	7851	AVG		7779		1.02984	25.00000	O
Toluene	7327	7593	7681	7656	7807	7772	AVG		7639		2.24818	25.00000	O
n-Nonane	5734	5221	5212	5531	5663	6365	AVG		5621		7.56430	25.00000	O
n-Decane	5382	4391	4442	5061	5880	6511	AVG		5278		15.68496	25.00000	O
Ethylbenzene	6829	7053	7315	7382	7563	7555	AVG		7283		3.98978	25.00000	O
m+p-Xylene	7287	7489	7572	7590	7713	7692	AVG		7557		2.06388	25.00000	O
o-Xylene	7272	7599	7695	7670	7842	7751	AVG		7638		2.57919	25.00000	O
1,2,4-trimethylbenzene	6386	6879	7128	7352	7576	7538	AVG		7143		6.35566	25.00000	O
n-Butylcyclohexane	6732	5777	5634	5664	5831	6577	AVG		6036		8.07019	25.00000	O
Naphthalene	4883	5062	5317	5556	5927	5945	AVG		5448		8.09890	25.00000	O
2,5-Dibromotoluene (FID)	2499	1999	1947	2053	2380	2558	AVG		2239		12.09467	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SM3545
Project : Long Term Monitoring, DCL Spring 2019 **Instrument ID:** GC02
Lab File IDs : 2MD10179.D 2MD10180.D 2MD10181.D **Calibration Date(s):** 23-APR-19 09:54
2MD10178.D 2MD10182.D 2MD10183.D 23-APR-19 14:07

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	2721	3107	3241	3390	3487	2789	AVG		3122		10.03832	25.00000	M (
Methyl tert-butylether	1708	1930	1931	1849	1881	1755	AVG		1842		5.02027	25.00000	O
Benzene	4065	4149	4171	4049	4120	3683	AVG		4040		4.47508	25.00000	O
Toluene	3647	3765	3824	3730	3767	3209	AVG		3657		6.20929	25.00000	O
Ethylbenzene	2849	3133	3214	3242	3288	2766	AVG		3082		7.14210	25.00000	O
m+p-Xylene	3708	3863	3971	3833	3783	2639	AVG		3633		13.61967	25.00000	O
o-Xylene	3125	3310	3408	3312	3340	2822	AVG		3219		6.70954	25.00000	O
1,2,4-trimethylbenzene	2721	3107	3241	3390	3487	2789	AVG		3122		10.03832	25.00000	O
Naphthalene	2112	3097	3095	3455	3755	2940	AVG		3076		18.11988	25.00000	O
2,5-Dibromotoluene (PID)	983	11130	15591	119622	312052	726390	QUA	4.77468	0.00026	1.951e-01	0.99728	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** SM3545
Project : Long Term Monitoring, DCL Spring 2019 **Instrument ID:** GC02
Lab File IDs : 2MD10179.D 2MD10180.D 2MD10181.D **Calibration Date(s):** 23-APR-19 09:54
2MD10178.D 2MD10182.D 2MD10183.D 23-APR-19 14:07

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5870	5526	5477	5693	5725	5470	AVG		5627		2.86752	25.00000	M (
C9-C12 Aliphatic	5786	5170	5170	5379	5945	6071	AVG		5587		7.12927	25.00000	M (
n-Pentane	5122	4765	4699	5007	5064	4813	AVG		4911		3.56414	25.00000	O
2-Methylpentane	5797	5542	5548	5738	5717	5456	AVG		5633		2.40710	25.00000	O
Methyl tert-butylether	4190	4219	4236	4141	4107	3875	AVG		4128		3.22669	25.00000	O
2,2,4-Trimethylpentane	6691	6273	6185	6333	6394	6141	AVG		6336		3.10919	25.00000	O
Benzene	7719	7608	7622	7531	7586	7227	AVG		7549		2.23943	25.00000	O
Toluene	7414	7489	7584	7484	7532	7193	AVG		7449		1.84530	25.00000	O
n-Nonane	5494	5107	5146	5583	5832	5991	AVG		5525		6.44291	25.00000	O
n-Decane	4853	4138	4364	5037	5889	6003	AVG		5047		15.2297	25.00000	O
Ethylbenzene	6336	6845	7013	7208	7281	6997	AVG		6947		4.86194	25.00000	O
m+p-Xylene	6959	7230	7466	7432	7467	7157	AVG		7285		2.83719	25.00000	O
o-Xylene	6886	7396	7518	7501	7541	7173	AVG		7336		3.52650	25.00000	O
1,2,4-trimethylbenzene	5905	6507	6744	7133	7369	6978	AVG		6773		7.67717	25.00000	O
n-Butylcyclohexane	6717	6201	5975	5722	6000	6139	AVG		6126		5.44707	25.00000	O
Naphthalene	3382	4618	4612	5315	5790	5487	AVG		4867		17.8382	25.00000	O
2,5-Dibromotoluene (FID)	1040	7507	10107	87111	235063	682034	QUA	4.34692	0.00042	1.729e-01	0.99821	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Sp
Lab ID : WG251036-8
Lab File ID : 2MD10132.D
Initial Calibration Date(s): 03/01/19 16:33 03/01/19 20:00

SDG: SM3545
Analytical Date: 04/18/19 09:50
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	Benzene	4590	4154	0.100	-9.49268	25.00000	Averaged
30	Ethylbenzene	3544	3308	0.100	-6.66830	25.00000	Averaged
40	Methyl tert-butylether	2128	1906	0.100	-10.42491	25.00000	Averaged
50	Naphthalene	3723	3729	0.100	0.16670	25.00000	Averaged
60	Toluene	4146	3794	0.100	-8.49810	25.00000	Averaged
70	m+p-Xylene	4097	3870	0.100	-5.55277	25.00000	Averaged
80	o-Xylene	3653	3352	0.100	-8.22666	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	3088	3305	0.100	7.03899	25.00000	Averaged
180	1,2,4-trimethylbenzene	3626	3490	0.100	-3.74201	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Sp
Lab ID : WG251036-8
Lab File ID : 2MD10132.D
Initial Calibration Date(s): 03/01/19 16:33 03/01/19 20:00

SDG: SM3545
Analytical Date: 04/18/19 09:50
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
60	Benzene	7779	7475	0.100	-3.91146	25.00000	Averaged
70	Ethylbenzene	7283	7108	0.100	-2.40175	25.00000	Averaged
80	Methyl tert-butylether	4250	4098	0.100	-3.58415	25.00000	Averaged
90	Naphthalene	5448	5587	0.100	2.55442	25.00000	Averaged
100	Toluene	7639	7381	0.100	-3.37917	25.00000	Averaged
110	m+p-Xylene	7557	7279	0.100	-3.67884	25.00000	Averaged
120	o-Xylene	7638	7354	0.100	-3.71602	25.00000	Averaged
200	n-Pentane	4964	4934	0.100	-0.60780	25.00000	Averaged
210	2-Methylpentane	5692	5568	0.100	-2.17658	25.00000	Averaged
220	2,2,4-Trimethylpentane	6337	6097	0.100	-3.78405	25.00000	Averaged
230	n-Nonane	5621	5253	0.100	-6.54117	30.00000	Averaged
240	n-Decane	5278	4738	0.100	-10.23075	25.00000	Averaged
250	n-Butylcyclohexane	6036	5442	0.100	-9.83289	25.00000	Averaged
260	1,2,4-trimethylbenzene	7143	7142	0.100	-0.01308	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	2239	2349	0.100	4.89116	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Sp
Lab ID : WG251036-9
Lab File ID : 2MD10152.D
Initial Calibration Date(s): 03/01/19 16:33 03/01/19 20:00

SDG: SM3545
Analytical Date: 04/19/19 05:45
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	Benzene	4590	4204	0.100	-8.40194	25.00000	Averaged
30	Ethylbenzene	3544	3317	0.100	-6.40870	25.00000	Averaged
40	Methyl tert-butylether	2128	1787	0.100	-16.03493	25.00000	Averaged
50	Naphthalene	3723	3705	0.100	-0.49187	25.00000	Averaged
60	Toluene	4146	3849	0.100	-7.16200	25.00000	Averaged
70	m+p-Xylene	4097	3903	0.100	-4.74855	25.00000	Averaged
80	o-Xylene	3653	3379	0.100	-7.48800	25.00000	Averaged
90	2,5-Dibromotoluene (PID)	3088	2598	0.100	-15.86634	25.00000	Averaged
180	1,2,4-trimethylbenzene	3626	3459	0.100	-4.59200	25.00000	Averaged

*** = Compound out of QC criteria**

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://katahdinlab.com
sales@katahdinlab.com

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Sp
Lab ID : WG251036-9
Lab File ID : 2MD10152.D
Initial Calibration Date(s): 03/01/19 16:33 03/01/19 20:00

SDG: SM3545
Analytical Date: 04/19/19 05:45
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
60	Benzene	7779	7674	0.100	-1.35178	25.00000	Averaged
70	Ethylbenzene	7283	7268	0.100	-0.19655	25.00000	Averaged
80	Methyl tert-butylether	4250	4029	0.100	-5.22067	25.00000	Averaged
90	Naphthalene	5448	5672	0.100	4.10573	25.00000	Averaged
100	Toluene	7639	7611	0.100	-0.36713	25.00000	Averaged
110	m+p-Xylene	7557	7476	0.100	-1.07546	25.00000	Averaged
120	o-Xylene	7638	7552	0.100	-1.13371	25.00000	Averaged
200	n-Pentane	4964	4654	0.100	-6.23064	25.00000	Averaged
210	2-Methylpentane	5692	5261	0.100	-7.56593	25.00000	Averaged
220	2,2,4-Trimethylpentane	6337	5717	0.100	-9.77865	25.00000	Averaged
230	n-Nonane	5621	4577	0.100	-18.58030	30.00000	Averaged
240	n-Decane	5278	4209	0.100	-20.24671	25.00000	Averaged
250	n-Butylcyclohexane	6036	4869	0.100	-19.33004	25.00000	Averaged
260	1,2,4-trimethylbenzene	7143	7215	0.100	1.01000	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	2239	1876	0.100	-16.21711	25.00000	Averaged

*** = Compound out of QC criteria**

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Tel:(207) 874-2400 Fax:(207) 775-4029

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sales@katahdinlab.com

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Spring 2019 **SDG:** SM3545
Lab ID : WG251381-4 **Analytical Date:** 04/23/19 22:39
Lab File ID : 2MD10192.D **Instrument ID:** GC02
Initial Calibration Date(s): 04/23/19 09:54 04/23/19 14:07 **Column ID:** B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4911	4602	4602	0.100	-6.29625	25.00000	Averaged
6	2-Methylpentane	5633	5291	5291	0.100	-6.07802	25.00000	Averaged
7	Methyl tert-butylether	4128	4282	4282	0.100	3.72168	25.00000	Averaged
8	2,2,4-Trimethylpentane	6336	5870	5870	0.100	-7.35189	25.00000	Averaged
9	Benzene	7549	7676	7676	0.100	1.68858	25.00000	Averaged
11	Toluene	7449	7649	7649	0.100	2.68094	25.00000	Averaged
12	n-Nonane	5525	4966	4966	0.100	-10.13195	30.00000	Averaged
13	n-Decane	5047	4401	4401	0.100	-12.80608	25.00000	Averaged
14	Ethylbenzene	6947	7305	7305	0.100	5.16028	25.00000	Averaged
15	m+p-Xylene	7285	7566	7566	0.100	3.84983	25.00000	Averaged
16	o-Xylene	7336	7655	7655	0.100	4.35899	25.00000	Averaged
18	1,2,4-trimethylbenzene	6773	7277	7277	0.100	7.44435	25.00000	Averaged
19	n-Butylcyclohexane	6126	5172	5172	0.100	-15.57157	25.00000	Averaged
20	Naphthalene	4867	5574	5574	0.100	14.51189	25.00000	Averaged
21	2,5-Dibromotoluene (FID)	50.00000	42.11346	1787	0.100	-15.77309	25.00000	Quadratic

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Spring 2019
Lab ID : WG251381-4
Lab File ID : 2MD10192.D
Initial Calibration Date(s): 04/23/19 09:54 04/23/19 14:07

SDG: SM3545
Analytical Date: 04/23/19 22:39
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	1842	1933	1933	0.100	4.92370	25.00000	Averaged
3	Benzene	4040	4186	4186	0.100	3.61347	25.00000	Averaged
4	Toluene	3657	3849	3849	0.100	5.23843	25.00000	Averaged
5	Ethylbenzene	3082	3336	3336	0.100	8.23966	25.00000	Averaged
6	m+p-Xylene	3633	3928	3928	0.100	8.13278	25.00000	Averaged
7	o-Xylene	3219	3416	3416	0.100	6.09700	25.00000	Averaged
8	1,2,4-trimethylbenzene	3122	3485	3485	0.100	11.62430	25.00000	Averaged
10	Naphthalene	3076	3655	3655	0.100	18.85253	25.00000	Averaged
11	2,5-Dibromotoluene (PID)	50.00000	39.95738	2448	0.100	-20.08523	25.00000	Quadratic

*** = Compound out of QC criteria**

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services **SDG :** SM3545
Project : Long Term Monitoring, DCL Spring 2019
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG247799-4	03/01/19	16:33		31.294
Initial Calibration	WG247799-4	03/01/19	16:33	31.284	
Initial Calibration	WG247799-1	03/01/19	17:15		31.292
Initial Calibration	WG247799-1	03/01/19	17:15	31.282	
Initial Calibration	WG247799-2	03/01/19	17:56		31.292
Initial Calibration	WG247799-2	03/01/19	17:56	31.282	
Initial Calibration	WG247799-3	03/01/19	18:37		31.294
Initial Calibration	WG247799-3	03/01/19	18:37	31.284	
Initial Calibration	WG247799-5	03/01/19	19:19		31.291
Initial Calibration	WG247799-5	03/01/19	19:19	31.283	
Initial Calibration	WG247799-6	03/01/19	20:00		31.296
Initial Calibration	WG247799-6	03/01/19	20:00	31.286	
Independent Source	WG247799-7	03/01/19	20:41	31.283	31.293
Continuing Calibrati	WG251036-8	04/18/19	09:50	31.284	31.294
Method Blank Sample	WG251036-1	04/18/19	11:20	31.286	31.296
Laboratory Control S	WG251036-2	04/18/19	12:01	31.287	31.296
Laboratory Control S	WG251036-3	04/18/19	12:43	31.282	31.291
LFM-TRIPBLANK_SPR19	SM3545-1	04/18/19	18:14	31.3	31.311
LFM-03-07_SPR19	SM3545-2	04/18/19	19:39	31.295	31.306
LFM-99-05A_SPR19	SM3545-3	04/18/19	20:22	31.295	31.306
LFM-DUP01_SPR19	SM3545-4	04/18/19	21:05	31.298	31.308
LFM-99-06ARP_SPR19	SM3545-5	04/18/19	21:48	31.3	31.311
LFM-99-02B_SPR19	SM3545-6	04/18/19	22:32	31.299	31.309
Matrix Spike	WG251036-4	04/19/19	02:51	31.305	31.315
Matrix Spike Duplica	WG251036-5	04/19/19	03:34	31.307	31.317
Continuing Calibrati	WG251036-9	04/19/19	05:45	31.305	31.316
Initial Calibration	WG251714-4	04/23/19	09:54		31.306
Initial Calibration	WG251714-4	04/23/19	09:54	31.296	
Initial Calibration	WG251714-1	04/23/19	10:35		31.303
Initial Calibration	WG251714-1	04/23/19	10:35	31.293	
Initial Calibration	WG251714-2	04/23/19	11:17		31.304
Initial Calibration	WG251714-2	04/23/19	11:17	31.293	
Initial Calibration	WG251714-3	04/23/19	11:59		31.302
Initial Calibration	WG251714-3	04/23/19	11:59	31.292	
Initial Calibration	WG251714-5	04/23/19	13:26		31.303
Initial Calibration	WG251714-5	04/23/19	13:26	31.294	

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
SDG : SM3545
Project : Long Term Monitoring, DCL Spring 2019
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG251714-6	04/23/19	14:07		31.305
Initial Calibration	WG251714-6	04/23/19	14:07	31.294	
Independent Source	WG251714-7	04/23/19	16:53	31.298	31.308
Method Blank Sample	WG251381-1	04/23/19	17:35	31.297	31.308
Laboratory Control S	WG251381-2	04/23/19	18:18	31.306	31.316
Laboratory Control S	WG251381-3	04/23/19	19:01	31.3	31.31
LFM-03-07_SPR19	SM3545-2RA	04/23/19	19:44	31.304	31.315
LFM-DUP01_SPR19	SM3545-4RA	04/23/19	20:28	31.3	31.311
Continuing Calibrati	WG251381-4	04/23/19	22:39	31.303	31.313

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 041019-DCL

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments:

DCL
Cool to 4±2°C, on ice

Equipment:

Peristaltic Pump
Teflon tubing

SM3545

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
2	2* 1 Liter, amber, glass, HCl
21	1* 2-1 Liter, amber, glass,
4	3* 40mL glass VOA Vials,
46	1* 250mL, plastic,
47	1* 500mL, amber glass, H_2SO_4
48	1* 250mL plastic, NaOH
49	1* 500mL plastic,
5	1* 125mL plastic,
6	1* 125mL, plastic, 1* Sterile amber glass H_2SO_4
9	1* 250mL, plastic, HNO_3
HIDE	*,

Event: KOMAN, Long Term Monitoring, DCL Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: A2320B - Alkalinity (46)	A2540C - TDS (49)	E353.2 - Nitrite Nitrate as N (47)	E410.4 - COD (6)	MADEPEP - EPH with PAHs (2)	MADEPVP - VPH with targets (4)	SW6010C - Ba Cd Cr Cu Fe Pb Mn Se Ag (9)	SW6020A - As (9)	SW7470A - Mercury (9)	SW8081B - Pesticides (21)	SW9012B - Cyanide (48)	SW9056A - Cl SO4 (5)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
1	LFM-TRIP BLANK_SPR19	WQ	4/10/19	--	B:A						X							FIELDQC	TB1	0.00	0.00
2	~~LFM-03-07_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~LFM-03-07~~	~~N1~~	~~10.90~~	~~20.90~~
3	~~LFM-99-02B_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~LFM-99-02B~~	~~N1~~	~~14.50~~	~~25.83~~
4	LFM-99-05A_SPR19	WG	4/9/19	1312	B:A	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	N1	19.00	29.98
5	LFM-DUP01_SPR19	WG	4/9/19	1317	B:A	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	FD1	19.00	29.98
6	LFM-99-06ARP_SPR19	WG	4/10/19	0935	B:A	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-06ARP	N1	10.09	19.39
7																					

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	Date	Time
Butt Cia	4/10/19	1526
	4-11-19	1511

Received by: ~~*(Signature)*~~	Date	Time
	4-10-19	1520

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

4.12.19 935

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client: TA / Koman	KAS PM: HMM	Sampled By: Client	
Project:	KIMS Entry By: SO	Delivered By: Fedex	
KAS Work Order#: SM3545-3547	KIMS Review By: HMM	Received By: JCB	
SDG #:	Cooler: 1 of 2	Date/Time Rec.: 4/12/19 935	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.6
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client:	TA / Koman	KAS PM:	HMM	Sampled By:	Client
Project:		KIMS Entry By:	SO	Delivered By:	Fedex
KAS Work Order#:	580345-3547	KIMS Review By:	HMM	Received By:	JCB
SDG #:		Cooler: 2 of 2		Date/Time Rec.:	4-12-19 935

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.8
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

360325-Boss

COC # 041019-DCL

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
2	2* 1 Liter, amber, glass,
21	1* 2-1 Liter, amber, glass,
4	3* 40mL glass VOA Vials,
46	1* 250mL, plastic,
47	1* 500mL, amber glass,
48	1* 250mL plastic,
49	1* 500mL plastic,
5	1* 125mL plastic,
6	1* 125mL, plastic,
9	1* 250mL, plastic,
HIDE	*,

Event: KOMAN, Long Term Monitoring, DCL Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init.	A2320B - Alkalinity	A2540C - TDS	E353.2 - Nitrite Nitrate as N	E410.4 - COD	MADEPEP - EPH with PAHs	MADEPVP - VPH with targets	SW6010C - Ba Cd Cr Cu Fe Pb Mn Se Ag	SW6020A - As	SW7470A - Mercury	SW8081B - Pesticides	SW9012B - Cyanide	SW9056A - Cl SO4	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
	Analytical Test Method					46	49	47	6	2	4	9	9	9	21	48	5				
1	LFM-TRIP BLANK_SPR19	WQ									X							FIELDQC	TB1	0.00	0.00
2	LFM-03-07_SPR19	WG	4/9/19	0840	SAS	X	X	X	X	X	X	X	X	X	X	X	X	LFM-03-07	N1	10.90	20.90
3	LFM-99-02B_SPR19	WG				X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-02B	N1	14.50	25.83
4	LFM-99-05A_SPR19	WG				X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	N1	19.00	29.98
5	LFM-DUP01_SPR19	WG				X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	FD1	19.00	29.98
6	LFM-99-06ARP_SPR19	WG				X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-06ARP	N1	10.09	19.39
7																					
		Turnaround Time: 21 Days																			

Relinquished by: *(Signature)*	Date	Time
[illegible]	4/10/2019	1520
~~[illegible]~~	~~4/10/2019~~	~~1520~~
[illegible]	4/11-19	1100

Received by: *(Signature)*	Date	Time
[illegible]	4/11-19	1529
[illegible]	4/12/19	0920

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

0.8, 2.9 BRHG 0.0 Transfer RP 4/12/19

680-167491 Chain of Custody

6/5/2019 (Rev. 1)

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 041019-DCL

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments:

DCL
Cool to <4°C, on ice

Equipment:

Peristaltic Pump
Teflon tubing

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
2	2" 1 Liter, amber, glass, HCl
21	1" 2-1 Liter, amber, glass,
4	3" 40mL glass VOA Vials,
46	1" 250mL, plastic,
47	1" 500mL, amber glass, H_2SO_4
48	1" 250mL plastic, NaOH
49	1" 500mL plastic,
5	1" 125mL plastic,
6	1" 125mL, plastic, 1" 500mL amber glass H_2SO_4
9	1" 250mL, plastic, HNO_3
HIDE	*,

Event: KOMAN, Long Term Monitoring, DCL Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init.	A2320B - Alkalinity	A2540C - TDS	E353.2 - Nitrite Nitrate as N	E410.4 - COD	MADEPEP - EPH with PAHs	MADEPVP - VPH with targets	SW6010C - Ba Cd Cr Cu Fe Pb Mn Se Ag	SW6020A - As	SW7470A - Mercury	SW8081B - Pesticides	SW9012B - Cyanide	SW9056A - Cl SO4	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
						46	49	47	6	2	4	9	9	9	21	48	5				
1	LFM-TRIP BLANK_SPR19	WQ	4/10/19	—	B:A						X							FIELDQC	TB1	0.00	0.00
2	~~LFM-03-07_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~LFM-03-07~~	~~N1~~	~~10.90~~	~~20.90~~
3	~~LFM-99-02B_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~LFM-99-02B~~	~~N1~~	~~14.50~~	~~25.83~~
4	LFM-99-05A_SPR19	WG	4/9/19	1312	B:A	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	N1	19.00	29.98
5	LFM-DUP01_SPR19	WG	4/9/19	1317	B:A	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	FD1	19.00	29.98
6	LFM-99-06ARP_SPR19	WG	4/10/19	0535	B:A	X	X	X	X	X	X	X	X	X	X	X	X	LFM-99-06ARP	N1	10.09	19.39
7																					
		Turnaround Time: 21 Days																			

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
Butt Cir	4/10/19	1520	[signature]	4-10-19	1520
[signature]	4-11-19	1520	[signature]	4/12/19	0920

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040919-AOC32

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:
AOC 32/43A

Equipment:

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3* 40mL glass VOA Vials,
4	3* 40mL glass VOA Vials,
9	1* 250mL, plastic,
HIDE	

Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init.	MADEPVP - VPH with targets	SW6010C - Mn	SW6020A - As	SW8260B - VOCs	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
					Analytical Test Method	4	9	9	29						
1	~~32M-01-13XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-13XBR~~	~~N1~~	~~0.00~~	~~0.00~~		1
2	32M-01-14XOB_SPR19	WG	4/9/19	0930	BA	X	X	X	X	32M-01-14XOB	N1	17.30	27.30		1
3	~~32M-01-17XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-17XBR~~	~~N1~~	~~41.40~~	~~51.40~~		1
4	~~32M-01-18XBR_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-18XBR~~	~~N1~~	~~0.00~~	~~0.00~~		1
5	~~32M-DUP01_SPR19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~X~~	~~32M-01-18XBR~~	~~FD1~~	~~0.00~~	0.00		1
6	32M-TRIP BLANK	WQ	4/9/19	-	BA				X	FIELDQC	TB1	0.00	0.00		1
7	32M-TripBlank	WQ	4/9/19	-	BA	X				FieldQC	TB1				
8															
9															
10															
		Turnaround Time: 21 Days													

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time	Shipping Date / Carrier / Airbill Number
[signature]	4/10/19	1520	[signature]	4-10-19	1520	
[signature]	4-7-19	1820				Received by Laboratory: *(Signature, Date, Time)* & condition

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040919-AOC32

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

AOC 32/43A

Equipment:

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3* 40mL glass VOA Vials,
4	3* 40mL glass VOA Vials,
9	1* 250mL, plastic,
HIDE	

Analytical Test Method

Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init	MADEPVP - VPH with targets	SW6010C - Mn	SW6020A - As	SW8260B - VOCs	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
						4	9	9	29						
1	32M-01-13XBR_SPR19	WG	4/9/19	0545	CV	X	X	X	X	32M-01-13XBR	N1	0.00	0.00		1
2	32M-01-14XOB_SPR19	WG				X	X	X	X	32M-01-14XOB	N1	17.30	27.30		1
3	32M-01-17XBR_SPR19	WG				X	X	X	X	32M-01-17XBR	N1	41.40	51.40		1
4	32M-01-18XBR_SPR19	WG	4/9/19	1010	CV	X	X	X	X	32M-01-18XBR	N1	0.00	0.00		1
5	32M-DUP01_SPR19	WG	4/9/19	1015	CV	X	X	X	X	32M-01-18XBR	FD1	0.00	0.00		1
6	32M-TRIP BLANK	WQ							X	FIELDQC	TB1	0.00	0.00		1
7															
8															
9															
10															
		Turnaround Time: 21 Days													

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
M. V	4/9/19	1145	Brett Cox	4/9/19	1145
Brett Cox	4/10/19	1522		4/10/19	1520
	4-11-19	1100			

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040919-AOC32

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WQ	Water Quality Control Matrix

Code	Container/Preservative
29	3* 40mL glass VOA Vials,
4	3* 40mL glass VOA Vials,
9	1* 250mL, plastic,
HIDE	

						Analytical Test Method	MADEPVP - VPH with targets	SW6010C - Mn	SW6020A - As	SW8260B - VOCs					
	Event: KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019						**4**	**9**	**9**	**29**					
	Sample ID	Matrix	Date	Time	Samp Init.						Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	32M-01-13XBR_SPR19	WG					X	X	X	X	32M-01-13XBR	N1	0.00	0.00		1
2	32M-01-14XOB_SPR19	WG					X	X	X	X	32M-01-14XOB	N1	17.30	27.30		1
3	32M-01-17XBR_SPR19	WG	4/9/2019	0835	SAS		X	X	X	X	32M-01-17XBR	N1	41.40	51.40	MS/MSD	1
4	32M-01-18XBR_SPR19	WG					X	X	X	X	32M-01-18XBR	N1	0.00	0.00		1
5	32M-DUP01_SPR19	WG					X	X	X	X	32M-01-18XBR	FD1	0.00	0.00		1
6	32M-TRIP BLANK	WQ								X	FIELDQC	TB1	0.00	0.00		1
7																
8																
9																
10																
		Turnaround Time: 21 Days														

Relinquished by: *(Signature)*	**Date**	**Time**
[signature]	4/10/2019	1530
[signature]	4-11-19	1300

Received by: *(Signature)*	**Date**	**Time**
[signature]	4-10-19	1530

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* & condition

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040819-AOC57

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 57 Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WS	Surface Water

Code	Container/Preservative
9	1* 250mL, plastic,
HIDE	

	Sample ID	Matrix	Date	Time	Samp Init.	SW6010C/FLDFLT - Fe Mn	SW6010C - Fe Mn	SW6020A/FLDFLT - As	SW6020A - As	Location ID	Sample Type	Depth (ft bgs) Top - Bottom	Comments	Cooler
	Event: KOMAN, Long Term Monitoring, AOC 57 Spring 2019					9	9	9	9					
11	57-SW1-SPR19	WS	4/8/19	0820	B:A		X		X	57-SW1	N,			
12														
13														
14														
15														
16														
17														
		Turnaround Time: 21 Days												

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time	Shipping Date / Carrier / Airbill Number
[signature]	4/10/19	1520	[signature]	4-10-19	1520	
[signature]	4-11-19	1520				**Received by Laboratory:** *(Signature, Date, Time)* **& condition**

Page 2 of 2

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # 040819-AOC57

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 57 Spring 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments: AOC 57

Equipment:

Code	Matrix
WG	Ground Water
WS	Surface Water

Code	Container/Preservative
9	1* 250mL, plastic,
HIDE	

Analytical Test Method

Event: KOMAN, Long Term Monitoring, AOC 57 Spring 2019

	Sample ID	Matrix	Date	Time	Samp Init.	SW6010C/FLDFLT - Fe Mn	SW6010C - Fe Mn	SW6020A/FLDFLT - As	SW6020A - As	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
						9	9	9	9						
1	57M-95-03X_SPR19	WG	4/5/19	0515	B:A		X		X	57M-95-03X	N1	7.00	17.00		1
2	57M-95-03X_SPR19	WG	4/5/19	0515	B:A		X		X	57M-95-03X	MS1	7.00	17.00		1
3	57M-95-03X_SPR19	WG	4/5/19	0515	B:A		X		X	57M-95-03X	SD1	7.00	17.00		1
4	57M-96-11X_SPR19	WG	4/5/19	0100	B:A		X		X	57M-96-11X	N1	2.00	12.00		1
5	57M-DUP01_SPR19	WG	4/5/19	0110	B:A		X		X	57M-96-11X	FD1	2.00	12.00		1
6	~~57-SW1_SPR19~~	~~WS~~				X		X		~~57-SW1~~	~~N1~~	~~0.00~~	~~0.00~~	~~field filtered~~	1
7	~~57-SWDUP_SPR19~~	~~WS~~				X		X		~~57-SW1~~	~~FD1~~	~~0.00~~	~~0.00~~	~~field filtered~~	1
8	~~57-SW1-SPR19~~	~~WS~~	~~4/5/19~~	~~0515~~	B:A		~~X~~		~~X~~	~~57-SW1~~	M1				
9															
10															
		Turnaround Time: 21 Days													

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
	4/10/19	1500		4/10/19	1500
	4-11-19	1110			

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-167491-1

Login Number: 167491
List Number: 1
Creator: Banda, Christy S

List Source: Eurofins TestAmerica, Savannah

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-167491-1
Project/Site: Fort Devens DCL

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-19 *
Alaska	State Program	10		06-30-19 *
Alaska (UST)	State Program	10	UST-104	09-22-19
ANAB	DoD		L2463	09-22-19
ANAB	ISO/IEC 17025		L2463.01	09-22-19
Arizona	State Program	9	AZ0808	12-14-19
Arkansas DEQ	State Program	6	88-0692	02-01-20
California	State Program	9	2939	06-30-19 *
Colorado	State Program	8	N/A	12-31-19
Connecticut	State Program	1	PH-0161	03-31-21
Florida	NELAP	4	E87052	06-30-19 *
GA Dept. of Agriculture	State Program	4	N/A	06-12-19
Georgia	State Program	4	N/A	06-30-19 *
Georgia	State Program	4	803	06-30-19 *
Guam	State Program	9	15-005r	04-17-20
Hawaii	State Program	9	N/A	06-30-19 *
Illinois	NELAP	5	200022	11-30-19
Indiana	State Program	5	N/A	06-30-19 *
Iowa	State Program	7	353	06-30-19 *
Kentucky (DW)	State Program	4	90084	12-31-19
Kentucky (UST)	State Program	4	18	06-30-19 *
Kentucky (WW)	State Program	4	90084	12-31-19
Louisiana	NELAP	6	30690	06-30-19 *
Louisiana (DW)	NELAP	6	LA160019	12-31-19
Maine	State Program	1	GA00006	09-25-20
Maryland	State Program	3	250	12-31-19
Massachusetts	State Program	1	M-GA006	06-30-19 *
Michigan	State Program	5	9925	06-30-19
Mississippi	State Program	4	N/A	06-30-19 *
Nebraska	State Program	7	TestAmerica-Savannah	06-30-19 *
New Jersey	NELAP	2	GA769	06-30-19 *
New Mexico	State Program	6	N/A	06-30-19 *
New York	NELAP	2	10842	04-01-20
North Carolina (DW)	State Program	4	13701	07-31-19
North Carolina (WW/SW)	State Program	4	269	12-31-19
Oklahoma	State Program	6	9984	08-31-19
Pennsylvania	NELAP	3	68-00474	06-30-19 *
Puerto Rico	State Program	2	GA00006	01-01-20
South Carolina	State Program	4	98001	06-30-19 *
Tennessee	State Program	4	TN02961	06-30-19 *
Texas	NELAP	6	T104704185-19-12	11-30-19
Texas (DW)	State Program	1	T104704185	06-30-19 *
US Fish & Wildlife	Federal		LE058448-0	07-31-19
Virginia	NELAP	3	460161	06-14-19 *
Washington	State Program	10	C805	06-10-19 *
West Virginia (DW)	State Program	3	9950C	12-31-19
West Virginia DEP	State Program	3	094	06-30-19 *
Wisconsin	State Program	5	999819810	08-31-19 *
Wyoming	State Program	8	8TMS-L	06-30-16 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-167491-1
Project/Site: Fort Devens DCL

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD		2907.01	10-31-19

B.2

Fall 2019 LTM Event

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-175052-3
Client Project/Site: LTM / AOC 43G Fll 2019
Revision: 1

For:
KOMAN Government Solutions, LLC
293 Boston Post Road West
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Jerry Lanier

Authorized for release by:
12/4/2019 11:15:01 AM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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

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

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

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QC Sample Results 9
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Certification Summary 59

Job ID: 680-175052-3

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: LTM / AOC 43G FII 2019

Report Number: 680-175052-3

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 the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 10/5/2019 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 0.7º C, 1.1º C, 1.4º C, 1.9º C and 3.6º C

The final report was revised to report total metals.

METALS (ICP)
Samples XGM-94-04X_FAL19 (680-175052-4) and AAFES-2_FAL19 (680-175052-5) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/06/2019 and analyzed on 10/07/2019.

Manganese failed the recovery criteria high for the MS of sample XGM-94-04X_FAL19MS (680-175052-4) in batch 680-589935.

Manganese failed the recovery criteria low for the MSD of sample XGM-94-04X_FAL19MSD (680-175052-4) in batch 680-589935.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Refer to the QC report for details.

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

METALS (ICPMS)
Samples XGM-94-04X_FAL19 (680-175052-4) and AAFES-2_FAL19 (680-175052-5) were analyzed for Metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 10/06/2019 and analyzed on 10/09/2019.

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

ALKALINITY
Samples XGM-94-04X_FAL19 (680-175052-4) and AAFES-2_FAL19 (680-175052-5) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 10/08/2019.

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

Subcontract Work
Method MA VPH: This method was subcontracted to Katahdin Analytical Services Inc. The subcontract laboratory certification is different from that of the facility issuing the final report.

Job ID: 680-175052-3 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / AOC 43G FII 2019

Job ID: 680-175052-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-175052-4	XGM-94-04X_FAL19	WG	10/02/19 12:55	10/05/19 09:25	
680-175052-5	AAFES-2_FAL19	WG	10/02/19 13:40	10/05/19 09:25	

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / AOC 43G FII 2019

Job ID: 680-175052-3

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
MA-VPH	MADEP VPH Volatile Petroleum Hydrocarbon	MA DEP	
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL SAV

Protocol References:

MA DEP = Massachusetts Department Of Environmental Protection

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

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

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

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

Client Sample ID: XGM-94-04X_FAL19

Lab Sample ID: 680-175052-4
Date Collected: 10/02/19 12:55
Matrix: WG
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	3200		50	50	17	ug/L		10/07/19 16:41	1
Manganese	5500	J1	10	3.0	1.0	ug/L		10/07/19 16:41	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	8.1		3.0	3.0	1.5	ug/L		10/09/19 18:53	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	170		10	10	3.1	mg/L		10/08/19 22:46	1

Client Sample ID: AAFES-2_FAL19

Lab Sample ID: 680-175052-5
Date Collected: 10/02/19 13:40
Matrix: WG
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	20000		50	50	17	ug/L		10/07/19 18:04	1
Manganese	3500		10	3.0	1.0	ug/L		10/07/19 18:04	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	42		3.0	3.0	1.5	ug/L		10/09/19 19:52	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	150		10	10	3.1	mg/L		10/08/19 22:50	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-589545/1-A
Matrix: Water
Analysis Batch: 589935

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 589545

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	50	U	50	50	17	ug/L		10/07/19 16:32	1
Manganese	3.0	U	10	3.0	1.0	ug/L		10/07/19 16:32	1

Lab Sample ID: LCS 680-589545/2-A
Matrix: Water
Analysis Batch: 589935

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 589545

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5010	5310		ug/L		106	87 - 115
Manganese	400	426		ug/L		107	90 - 114

Lab Sample ID: 680-175052-4 MS
Matrix: WG
Analysis Batch: 589935

Client Sample ID: XGM-94-04X_FAL19
Prep Type: Total Recoverable
Prep Batch: 589545

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	3200		5010	8250		ug/L		101	87 - 115
Manganese	5500	J1	400	6060	4	ug/L		142	90 - 114

Lab Sample ID: 680-175052-4 MSD
Matrix: WG
Analysis Batch: 589935

Client Sample ID: XGM-94-04X_FAL19
Prep Type: Total Recoverable
Prep Batch: 589545

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	3200		5010	8180		ug/L		100	87 - 115	1	20
Manganese	5500	J1	400	5780	4	ug/L		72	90 - 114	5	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-589541/1-A
Matrix: Water
Analysis Batch: 590266

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 589541

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/09/19 18:46	1

Lab Sample ID: LCS 680-589541/2-A
Matrix: Water
Analysis Batch: 590266

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 589541

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	112		ug/L		112	84 - 116

Lab Sample ID: 680-175052-4 MS
Matrix: WG
Analysis Batch: 590266

Client Sample ID: XGM-94-04X_FAL19
Prep Type: Total Recoverable
Prep Batch: 589541

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	8.1		100	112		ug/L		104	84 - 116

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 680-175052-4 MSD
Matrix: WG
Analysis Batch: 590266

Client Sample ID: XGM-94-04X_FAL19
Prep Type: Total Recoverable
Prep Batch: 589541

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	8.1		100	114		ug/L		106	84 - 116	2	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-473370/31
Matrix: Water
Analysis Batch: 473370

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	10	U	10	10	3.1	mg/L		10/08/19 20:37	1

Lab Sample ID: LCS 280-473370/30
Matrix: Water
Analysis Batch: 473370

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			200	204		mg/L		102	89 - 109		

Metals

Prep Batch: 589541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-4	XGM-94-04X_FAL19	Total Recoverable	WG	3005A	
680-175052-5	AAFES-2_FAL19	Total Recoverable	WG	3005A	
MB 680-589541/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-589541/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-175052-4 MS	XGM-94-04X_FAL19	Total Recoverable	WG	3005A	
680-175052-4 MSD	XGM-94-04X_FAL19	Total Recoverable	WG	3005A	

Prep Batch: 589545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-4	XGM-94-04X_FAL19	Total Recoverable	WG	3005A	
680-175052-5	AAFES-2_FAL19	Total Recoverable	WG	3005A	
MB 680-589545/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-589545/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-175052-4 MS	XGM-94-04X_FAL19	Total Recoverable	WG	3005A	
680-175052-4 MSD	XGM-94-04X_FAL19	Total Recoverable	WG	3005A	

Analysis Batch: 589935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-4	XGM-94-04X_FAL19	Total Recoverable	WG	6010C	589545
680-175052-5	AAFES-2_FAL19	Total Recoverable	WG	6010C	589545
MB 680-589545/1-A	Method Blank	Total Recoverable	Water	6010C	589545
LCS 680-589545/2-A	Lab Control Sample	Total Recoverable	Water	6010C	589545
680-175052-4 MS	XGM-94-04X_FAL19	Total Recoverable	WG	6010C	589545
680-175052-4 MSD	XGM-94-04X_FAL19	Total Recoverable	WG	6010C	589545

Analysis Batch: 590266

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-4	XGM-94-04X_FAL19	Total Recoverable	WG	6020A	589541
680-175052-5	AAFES-2_FAL19	Total Recoverable	WG	6020A	589541
MB 680-589541/1-A	Method Blank	Total Recoverable	Water	6020A	589541
LCS 680-589541/2-A	Lab Control Sample	Total Recoverable	Water	6020A	589541
680-175052-4 MS	XGM-94-04X_FAL19	Total Recoverable	WG	6020A	589541
680-175052-4 MSD	XGM-94-04X_FAL19	Total Recoverable	WG	6020A	589541

General Chemistry

Analysis Batch: 473370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-4	XGM-94-04X_FAL19	Total/NA	WG	SM 2320B	
680-175052-5	AAFES-2_FAL19	Total/NA	WG	SM 2320B	
MB 280-473370/31	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-473370/30	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / AOC 43G FII 2019

Job ID: 680-175052-3

Client Sample ID: XGM-94-04X_FAL19

Lab Sample ID: 680-175052-4

Date Collected: 10/02/19 12:55
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	589545	10/06/19 15:11	PG	TAL SAV
Total Recoverable	Analysis	6010C		1			589935	10/07/19 16:41	BCB	TAL SAV
	Instrument ID: ICPE									
Total Recoverable	Prep	3005A			50 mL	250 mL	589541	10/06/19 15:06	PG	TAL SAV
Total Recoverable	Analysis	6020A		1			590266	10/09/19 18:53	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			473370	10/08/19 22:46	SPG	TAL DEN
	Instrument ID: WC-AT3									

Client Sample ID: AAFES-2_FAL19

Lab Sample ID: 680-175052-5

Date Collected: 10/02/19 13:40
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	589545	10/06/19 15:11	PG	TAL SAV
Total Recoverable	Analysis	6010C		1			589935	10/07/19 18:04	BCB	TAL SAV
	Instrument ID: ICPE									
Total Recoverable	Prep	3005A			50 mL	250 mL	589541	10/06/19 15:06	PG	TAL SAV
Total Recoverable	Analysis	6020A		1			590266	10/09/19 19:52	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			473370	10/08/19 22:50	SPG	TAL DEN
	Instrument ID: WC-AT3									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: Fort Devens RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
TM0499-1, 2

Matrices: ✓Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No N/A (Yes) No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 11/01/19

TEST AMERICA SAVANNAH
DEVNS-LTM
TM0499

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
DEVNS-LTM
TM0499

Sample Receipt

The following samples were received on October 05, 2019 and were logged in under Katahdin Analytical Services work order number TM0499 for a hardcopy due date of October 24, 2019.

KATAHDIN Sample No.	TEST AMERICA SAVANNAH Sample Identification
TM0499-1	AAFES-2_FAL19
TM0499-2	XGM-94-04X_FAL19

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager. **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of work order TM0499 were analyzed in accordance with Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample TM0499-2 was used as the Matrix Spike (MS) and Matrix Spike Duplicate (MSD) as requested by the client.

MA-VPH Analysis

Samples TM0499-1, 1DL, 2, and 2DL were manually integrated for various target analytes, the C9-C10 aromatic range, and/or the surrogate 2,5-dibromotoluene. The specific reasons for the manual integrations are indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

Sample TM0499-1 and the MSD, WG264073-5, had low recoveries for the surrogate 2,5-dibromotoluene on the PID and/or the FID that were outside of the method acceptance limits.

The MS/MSD, WG264073-4 and 5, had recoveries for the C5-C8 and/or C9-C12 aliphatic ranges that were non-calculable and reported as 0% recovery due to the concentration in the native sample being higher than in the MS and/or MSD. The MS had a low recovery for the C9-C12 aromatic range and the MSD had a low recovery for the C9-C10 aromatic range and low recoveries for six target analytes that were outside of the method acceptance limits.

The target analyte naphthalene was detected below ½ the LOQ in the method blank WG264149-1. According to the DoD QSM, a method blank is considered to be contaminated if the concentration of any target analyte in the blank exceeds ½ the reporting limit and is greater than 1/10 the amount measured in any sample, or 1/10 the regulatory limit (whichever is greater). Since the method blank was acceptable, no further action was taken.

The calibration verification standard (CV) (file 2MJ10098) had a low response for the analyte n-decane that resulted in a %D that exceeded the method acceptance limits of ± 25%. Since the C9-C12 range response was acceptable, no further action was taken.

The CVs (files 2MJ10074 and 2MJ10099) had low responses for the surrogate 2,5-dibromotoluene on the PID and/or FID that resulted in %Ds that exceeded the method acceptance limits of ± 25%. Since the target analyte and range responses were acceptable, no further action was taken.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond 11.01.19

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Test America	KAS PM: [illegible]	Sampled By: Client	
Project:	KIMS Entry By: SLB	Delivered By: Fed Ex	
KAS Work Order#: TM0469, TM0499, TM0500	KIMS Review By: [illegible]	Received By: G. Brewer	
SDG #:	Cooler: X of 5	Date/Time Rec.: 10/05/19 12:25	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?		✓			
3. Chain of Custody signed by client?				✓	
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 1.1 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?			X		2 of 6 VPH vials arrived broken for MSD sample XGM-94-04x
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on: 9/12/19					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

QA-048 – Revision 7 – 09/26/2018

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Test America	KAS PM: HHM	Sampled By: Client	
Project:	KIMS Entry By: JCB	Delivered By: FedEx	
KAS Work Order#: TM0469, TM0494, TM0590	KIMS Review By: HHM	Received By: G. Brewer	
SDG #:	Cooler: 2B of 5	Date/Time Rec.: 10/05/19 12:25	

HHM 10-7-19

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.7 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?				✓	
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

QA-048 – Revision 7 – 09/26/2018

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Test America	KAS PM: TMM	Sampled By: Client	
Project:	KIMS Entry By: JCB	Delivered By: FedEx	
KAS Work Order#: TM0469 TM0499 TM0500	KIMS Review By: TMM	Received By: G. Brewer	
SDG #:	Cooler: 3# of 5 XB	Date/Time Rec.: 10/05/19 12:25	

TMM 10-7-19

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?		✓			
3. Chain of Custody signed by client?				✓	
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 1.9 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

QA-048 – Revision 7 – 09/26/2018

360325-Boston 360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

~~TM01469~~ JOB #17 TM0499

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC43G-FAL19

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number,	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:
on ICE
WG= Groundwater
N1 = Native

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
4	2 x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6°C

Event: KOMAN, Long Term Monitoring AOC 43G Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: MADEPVP - VPH with targets	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	AAFES-2_FAL19	WG	10/2/19	1340	MM	X	AAFES-2	N1	16.20	33.30		1
2	~~XGM-93-02X_FAL19~~	~~WG~~				~~X~~	~~XGM-93-02X~~	~~N1~~	~~28.00~~	~~38.00~~		1
3	XGM-94-04X_FAL19	WG	10/2/19	1355	MM	X	XGM-94-04X	N1	18.20	30.50	MS/MSD (6 Bottles)	1
4	~~XGM-97-12X_FAL19~~	~~WG~~				~~X~~	~~XGM-97-12X~~	~~N1~~	~~24.00~~	~~34.00~~		1
5												
6												
7												
8												
9												
10												
		Turnaround Time:										

2
4

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
	10/4/19	1500		10-4-19	1501
	10-4-19	1808	Fed Ex		
Fed Ex				10/05/19	12:25

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Nov. 04, 2019
12:43 PM

Login Number: TM0499

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Quote/Incoming:

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.1 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative. VPH undetect ethylbenzene, see work order SL3114.
CHECK NO.	:	
CLIENT PO#		PO# 3056391
CLIENT PROJECT MANAGE		
CONTRACT	:	
COOLER TEMPERATURE	:	1.1, 0.7, 1.9
DELIVERY SERVICES	:	FedEx
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS	:	JCB
PM	:	HHM
PROJECT NAME	:	DEVNS-LTM
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF, EDD and invoice to Jerry. No HC.

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0499-1	AAFES-2_FAL19	02-OCT-19 13:40	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	16-OCT-19	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0499-2	XGM-94-04X_FAL19	02-OCT-19 12:55	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	16-OCT-19	40mL Vial+HCl		**MS/MSD Limited Volume- 4 vials**

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0499-3	MS CHARGE	02-OCT-19 12:55	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	16-OCT-19	40mL Vial+HCl		**not a sample, MS charge**

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0499-4	MSD CHARGE	02-OCT-19 12:55	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	16-OCT-19	40mL Vial+HCl		**not a sample, MSD charge**

Total Samples: **4** ***Total Analyses:*** **4**

HHM 11-4-19

SAMPLE DATA SUMMARY PACKAGE

Page 25 of 60 Katahdin Analytical Services A000001 12/4/2019 (Rev 1)

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0499-1
Client ID: AAFES-2_FAL19
Project: DEVNS-LTM
SDG: TM0499
Lab File ID: 2MJ10081.D

Sample Date: 02-OCT-19
Received Date: 05-OCT-19
Extract Date: 14-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264073

Analysis Date: 14-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics		1200	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics		790	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	E	1400	ug/L	1	100	100	50.	75.
Benzene	J	1.5	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene		25	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether		5.6	ug/L	1	5	5.0	0.31	3.8
Naphthalene		21	ug/L	1	5	5.0	1.6	3.8
Toluene	J	4.4	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	J	5.2	ug/L	1	10	10.	0.92	7.5
o-Xylene		6.5	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)	*	63.9	%					
2,5-Dibromotoluene (PID)		78.7	%					

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http://www.katahdinlab.com

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0499-1DL
Client ID: AAFES-2_FAL19
Project: DEVNS-LTM
SDG: TM0499
Lab File ID: 2MJ10120.D

Sample Date: 02-OCT-19
Received Date: 05-OCT-19
Extract Date: 16-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149

Analysis Date: 16-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics		620	ug/L	5	100	500	250	380
C9-C12 Aliphatics		620	ug/L	5	100	500	250	380
C9-C10 Aromatics		1400	ug/L	5	100	500	250	380
Benzene	U	15	ug/L	5	3	15.	1.6	10.
Ethylbenzene	J	18	ug/L	5	5	25.	2.1	19.
Methyl tert-butylether	J	3.6	ug/L	5	5	25.	1.6	19.
Naphthalene		25	ug/L	5	5	25.	8.0	19.
Toluene	J	2.7	ug/L	5	5	25.	1.7	19.
m+p-Xylenes	J	4.8	ug/L	5	10	50.	4.6	38.
o-Xylene	J	4.2	ug/L	5	5	25.	2.4	19.
2,5-Dibromotoluene (FID)		82.5	%					
2,5-Dibromotoluene (PID)		98.0	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0499-2
Client ID: XGM-94-04X_FAL19
Project: DEVNS-LTM
SDG: TM0499
Lab File ID: 2MJ10082.D

Sample Date: 02-OCT-19
Received Date: 05-OCT-19
Extract Date: 14-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264073

Analysis Date: 14-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 04-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	EMM	1300	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	EMM	370	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	EM	900	ug/L	1	100	100	50.	75.
Benzene	J	2.4	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	M	27	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	M	8.1	ug/L	1	5	5.0	0.31	3.8
Naphthalene	M	10	ug/L	1	5	5.0	1.6	3.8
Toluene	JM	1.8	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	JM	3.2	ug/L	1	10	10.	0.92	7.5
o-Xylene	JM	3.6	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		75.3	%					
2,5-Dibromotoluene (PID)		88.7	%					

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0499-2DL
Client ID: XGM-94-04X_FAL19
Project: DEVNS-LTM
SDG: TM0499
Lab File ID: 2MJ10118.D

Sample Date: 02-OCT-19
Received Date: 05-OCT-19
Extract Date: 16-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149

Analysis Date: 16-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 04-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics		590	ug/L	4	100	400	200	300
C9-C12 Aliphatics	J	270	ug/L	4	100	400	200	300
C9-C10 Aromatics		830	ug/L	4	100	400	200	300
Benzene	J	1.3	ug/L	4	3	12.	1.2	8.0
Ethylbenzene		22	ug/L	4	5	20.	1.7	15.
Methyl tert-butylether	J	4.4	ug/L	4	5	20.	1.2	15.
Naphthalene	J	15	ug/L	4	5	20.	6.4	15.
Toluene	J	1.6	ug/L	4	5	20.	1.4	15.
m+p-Xylenes	U	40	ug/L	4	10	40.	3.7	30.
o-Xylene	J	3.2	ug/L	4	5	20.	1.9	15.
2,5-Dibromotoluene (FID)		77.5	%					
2,5-Dibromotoluene (PID)		91.2	%					

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Report of Analytical Results

Client:
Lab ID: WG264073-1RA
Client ID: Method Blank Sample
Project:
SDG: TM0499
Lab File ID: 2MJ10075.D

Sample Date:
Received Date:
Extract Date: 14-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264073

Analysis Date: 14-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 31-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		85.1	%					
2,5-Dibromotoluene (PID)		104.	%					

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Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG264149-1
Client ID: Method Blank Sample
Project:
SDG: TM0499
Lab File ID: 2MJ10100.D

Sample Date:
Received Date:
Extract Date: 15-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149

Analysis Date: 15-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 31-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	J	1.7	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		83.7	%					
2,5-Dibromotoluene (PID)		98.4	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** DEVNS-LTM **Matrix:** AQ
Lab Code: KAS **SDG:** TM0499

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
AAFES-2_FAL19	TM0499-1	B	63.9	*	78.7	
AAFES-2_FAL19	TM0499-1DL	B	82.5		98.0	
XGM-94-04X_FAL19	TM0499-2	B	75.3		88.7	
XGM-94-04X_FAL19	TM0499-2DL	B	77.5		91.2	
Method Blank Sample	WG264073-1RA	B	85.1		104.	
Laboratory Control S	WG264073-2RA	B	113.		130.	
Laboratory Control S	WG264073-3RA	B	82.2		96.6	
Matrix Spike	WG264073-4	B	82.1		97.0	
Matrix Spike Duplica	WG264073-5	B	52.8	*	58.6	*
Method Blank Sample	WG264149-1	B	83.7		98.4	
Laboratory Control S	WG264149-2	B	91.3		108.	
Laboratory Control S	WG264149-3	B	77.8		92.1	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG264073-2RA
LCSD ID: WG264073-3RA
Project:
SDG: TM0499
Report Date: 31-OCT-19
LCS File ID: 2MJ10076.D

Received Date:
Extract Date: 14-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264073
LCSD File ID: 2MJ10077.D

Analysis Date: 14-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	258.	86.0	261.	87.0	ug/L	1	25	70-130
C9-C12 Aliphatics	200.	196.	98.0	198.	99.0	ug/L	1	25	70-130
C9-C10 Aromatics	100.	99.2	99.2	98.7	98.7	ug/L	0	25	70-130
Benzene	100.	90.2	90.2	91.8	91.8	ug/L	2	25	70-130
Ethylbenzene	100.	95.4	95.4	96.9	96.9	ug/L	2	25	70-130
Methyl tert-butylether	100.	85.8	85.8	87.5	87.5	ug/L	2	25	70-130
Naphthalene	100.	98.6	98.6	88.9	88.9	ug/L	10	25	70-130
Toluene	100.	91.2	91.2	93.1	93.1	ug/L	2	25	70-130
m+p-Xylenes	200.	188.	94.0	185.	92.5	ug/L	2	25	70-130
o-Xylene	100.	93.0	93.0	93.7	93.7	ug/L	1	25	70-130
2,5-Dibromotoluene (FID)			113.		82.2				70-130
2,5-Dibromotoluene (PID)			130.		96.6				70-130

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ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG264149-2
LCSD ID: WG264149-3
Project:
SDG: TM0499
Report Date: 31-OCT-19
LCS File ID: 2MJ10101.D

Received Date:
Extract Date: 15-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149
LCSD File ID: 2MJ10102.D

Analysis Date: 15-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	303.	101.	302.	101.	ug/L	0	25	70-130
C9-C12 Aliphatics	200.	225.	112.	220.	110.	ug/L	2	25	70-130
C9-C10 Aromatics	100.	111.	111.	108.	108.	ug/L	3	25	70-130
Benzene	100.	103.	103.	101.	101.	ug/L	2	25	70-130
Ethylbenzene	100.	109.	109.	106.	106.	ug/L	3	25	70-130
Methyl tert-butylether	100.	96.8	96.8	94.7	94.7	ug/L	2	25	70-130
Naphthalene	100.	99.1	99.1	95.8	95.8	ug/L	3	25	70-130
Toluene	100.	104.	104.	102.	102.	ug/L	2	25	70-130
m+p-Xylenes	200.	200.	100.	197.	98.5	ug/L	2	25	70-130
o-Xylene	100.	105.	105.	102.	102.	ug/L	3	25	70-130
2,5-Dibromotoluene (FID)			91.3		77.8				70-130
2,5-Dibromotoluene (PID)			108.		92.1				70-130

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MS/MSD Recovery Report

MS ID: WG264073-4
MSD ID: WG264073-5
Sample ID: TM0499-2
Client ID: XGM-94-04X_FAL19
Project:
SDG: TM0499
MS File ID: 2MJ10094.D

Received Date:
Extract Date: 15-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264073
Report Date: 04-NOV-19
MSD File ID: 2MJ10095.D

Analysis Date: 15-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	300.	ug/L	EMM1300	1300	1220	0*	0*	6	50	70-130
C9-C12 Aliphatics	200.	200.	ug/L	EMM370	1340	1250	19.6*	0*	7	50	70-130
C9-C10 Aromatics	100.	100.	ug/L	EM900	1020	943	124.	48.3*	8	50	70-130
Benzene	100.	100.	ug/L	J2.4	103	73	101.	70.6	34	50	70-130
Ethylbenzene	100.	100.	ug/L	M27	128	91.5	101.	64.5*	33	50	70-130
Methyl tert-butylether	100.	100.	ug/L	M8.1	85.9	56.7	77.8	48.6*	41	50	70-130
Naphthalene	100.	100.	ug/L	M10	96.3	66.5	86.3	56.5*	37	50	70-130
Toluene	100.	100.	ug/L	JM1.8	96.4	65.2	94.6	63.4*	39	50	70-130
m+p-Xylenes	200.	200.	ug/L	JM3.2	186	133	91.2	64.8*	33	50	70-130
o-Xylene	100.	100.	ug/L	JM3.6	97.7	66	94.1	62.4*	39	50	70-130
2,5-Dibromotoluene (FID)							82.1	52.8*			70-130
2,5-Dibromotoluene (PID)							97.0	58.6*			70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : 2MJ10075.D
Instrument ID : GC02

SDG : TM0499
Lab Sample ID : WG264073-1RA
Date Analyzed : 14-OCT-19
Time Analyzed : 16:22
Date Extracted : 14-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG264073-2RA	2MJ10076.	10/14/19	17:31
Laboratory Control S	WG264073-3RA	2MJ10077.	10/14/19	18:14
AAFES-2_FAL19	TM0499-1	2MJ10081.	10/14/19	22:27
XGM-94-04X_FAL19	TM0499-2	2MJ10082.	10/14/19	23:10
Matrix Spike	WG264073-4	2MJ10094.	10/15/19	07:46
Matrix Spike Duplica	WG264073-5	2MJ10095.	10/15/19	08:27

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : 2MJ10100.D
Instrument ID : GC02

SDG : TM0499
Lab Sample ID : WG264149-1
Date Analyzed : 15-OCT-19
Time Analyzed : 13:33
Date Extracted : 15-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG264149-2	2MJ10101.D	10/15/19	14:14
Laboratory Control S	WG264149-3	2MJ10102.D	10/15/19	14:56
XGM-94-04X_FAL19	TM0499-2DL	2MJ10118.D	10/16/19	06:54
AAFES-2_FAL19	TM0499-1DL	2MJ10120.D	10/16/19	08:18

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0499
Project : DEVNS-LTM **Instrument ID:** GC02
Lab File IDs : 2MJ10063.D 2MJ10064.D 2MJ10065.D **Calibration Date(s):** 11-OCT-19 16:53
2MJ10062.D 2MJ10066.D 2MJ10067.D 11-OCT-19 20:26

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Crv					Max	
	1.0000	5.0000	10.0000	50.0000	100.0000	300.0000	New	b	m1	m2	%RSD	%RSD	
C9-C10 Aromatic	5061	5308	5557	6266	6050	4706	AVG		5491		10.7798(	25.00000	M (
Methyl tert-butylether	3520	3367	3337	3496	3502	3198	AVG		3403		3.71088	25.00000	O
Benzene	6829	6814	6870	7370	7197	6169	AVG		6875		6.00394	25.00000	O
Toluene	5817	6185	6324	6817	6610	5351	AVG		6184		8.65391	25.00000	O
Ethylbenzene	4894	5083	5333	5919	5762	4635	AVG		5271		9.47534	25.00000	O
m+p-Xylene	6125	6373	6555	6946	6213	4486	AVG		6116		13.89838	25.00000	O
o-Xylene	5082	5437	5607	6039	5758	4686	AVG		5435		8.95291	25.00000	O
1,2,4-trimethylbenzene	5061	5308	5557	6266	6050	4706	AVG		5491		10.7798(	25.00000	O
Naphthalene	2647	16363	40911	287664	579639	+++++	LNR	1.37792	5878		0.99923	0.99000	O
2,5-Dibromotoluene (PID)	+++++	5682	15031	186074	385357	980863	LNR	-1.77028	3320		0.99426	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0499
Project : DEVNS-LTM **Instrument ID:** GC02
Lab File IDs : 2MJ10063.D 2MJ10064.D 2MJ10065.D **Calibration Date(s):** 11-OCT-19 16:53
2MJ10062.D 2MJ10066.D 2MJ10067.D 11-OCT-19 20:26

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Crv					Max	
	1.0000	5.0000	10.0000	50.0000	100.0000	300.0000	New	b	m1	m2	%RSD	%RSD	
C5-C8 Aliphatic	5077	5269	5414	5221	5031	5175	AVG		5198		2.65631	25.00000	M (
C9-C12 Aliphatic	5787	4675	4727	4766	5207	5998	AVG		5193		11.1221(	25.00000	M (
n-Pentane	4746	4710	5109	4591	4417	4628	AVG		4700		4.91166	25.00000	O
2-Methylpentane	5241	5337	5288	5265	5070	5174	AVG		5229		1.81279	25.00000	O
Methyl tert-butylether	4332	4733	4377	4243	4265	3990	AVG		4323		5.58226	25.00000	O
2,2,4-Trimethylpentane	5245	5762	5845	5806	5605	5725	AVG		5664		3.90770	25.00000	O
Benzene	7362	7283	7260	7497	7532	7222	AVG		7359		1.75767	25.00000	O
Toluene	7024	7140	7217	7483	7530	7207	AVG		7267		2.73353	25.00000	O
n-Nonane	5496	4636	4837	4954	5020	5802	AVG		5124		8.54471	25.00000	O
n-Decane	5798	3849	3957	4393	5235	6041	AVG		4879		19.3769(	25.00000	O
Ethylbenzene	6297	6416	6763	7199	7274	7025	AVG		6829		5.97331	25.00000	O
m+p-Xylene	6720	6872	7209	7420	7442	7139	AVG		7134		4.07696	25.00000	O
o-Xylene	6572	6991	7296	7500	7534	7172	AVG		7177		5.00884	25.00000	O
1,2,4-trimethylbenzene	6208	6403	6617	7224	7361	7095	AVG		6818		6.94757	25.00000	O
n-Butylcyclohexane	5775	5501	5497	5138	5180	5954	AVG		5508		5.82780	25.00000	O
Naphthalene	2347	14959	37476	241667	511551	1543539	LNR	1.60411	5171		0.99988	0.99000	O
2,5-Dibromotoluene (FID)	+++++	2672	6616	72797	167070	559910	LNR	8.16972	1907		0.99902	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264073-8
Lab File ID : 2MJ10074.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0499
Analytical Date: 10/14/19 15:17
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
2	Methyl tert-butylether	3403	3061	3061	0.100	-10.06736	25.00000	Averaged	
3	Benzene	6875	6547	6547	0.100	-4.77470	25.00000	Averaged	
4	Toluene	6184	5987	5987	0.100	-3.18189	25.00000	Averaged	
5	Ethylbenzene	5271	5238	5238	0.100	-0.62228	25.00000	Averaged	
6	m+p-Xylene	6116	6196	6196	0.100	1.29991	25.00000	Averaged	
7	o-Xylene	5435	5400	5400	0.100	-0.63925	25.00000	Averaged	
8	1,2,4-trimethylbenzene	5491	5704	5704	0.100	3.86563	25.00000	Averaged	
10	Naphthalene	50.00000	51.65623	5911	0.100	3.31245	25.00000	Linear	
11	2,5-Dibromotoluene (PID)	50.00000	75.76357	5148	0.100	51.52715	25.00000	Linear	*

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264073-8
Lab File ID : 2MJ10074.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0499
Analytical Date: 10/14/19 15:17
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
5	n-Pentane	4700	4403	4403	0.100	-6.32624	25.00000	Averaged	
6	2-Methylpentane	5229	5009	5009	0.100	-4.20738	25.00000	Averaged	
7	Methyl tert-butylether	4323	3896	3896	0.100	-9.89116	25.00000	Averaged	
8	2,2,4-Trimethylpentane	5664	5588	5588	0.100	-1.35764	25.00000	Averaged	
9	Benzene	7359	6933	6933	0.100	-5.79078	25.00000	Averaged	
11	Toluene	7267	6844	6844	0.100	-5.82650	25.00000	Averaged	
12	n-Nonane	5124	4771	4771	0.100	-6.89477	30.00000	Averaged	
13	n-Decane	4879	4194	4194	0.100	-14.03481	25.00000	Averaged	
14	Ethylbenzene	6829	6633	6633	0.100	-2.87074	25.00000	Averaged	
15	m+p-Xylene	7134	6836	6836	0.100	-4.17816	25.00000	Averaged	
16	o-Xylene	7177	6945	6945	0.100	-3.24028	25.00000	Averaged	
18	1,2,4-trimethylbenzene	6818	6827	6827	0.100	0.13266	25.00000	Averaged	
19	n-Butylcyclohexane	5508	5020	5020	0.100	-8.84818	25.00000	Averaged	
20	Naphthalene	50.00000	51.15353	5124	0.100	2.30706	25.00000	Linear	
21	2,5-Dibromotoluene (FID)	50.00000	63.86801	2125	0.100	27.73603	25.00000	Linear	*

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264073-9
Lab File ID : 2MJ10098.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0499
Analytical Date: 10/15/19 10:33
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	3403	3319	3319	0.100	-2.47136	25.00000	Averaged
3	Benzene	6875	7007	7007	0.100	1.92867	25.00000	Averaged
4	Toluene	6184	6472	6472	0.100	4.65497	25.00000	Averaged
5	Ethylbenzene	5271	5623	5623	0.100	6.67355	25.00000	Averaged
6	m+p-Xylene	6116	6628	6628	0.100	8.35705	25.00000	Averaged
7	o-Xylene	5435	5749	5749	0.100	5.77674	25.00000	Averaged
8	1,2,4-trimethylbenzene	5491	5932	5932	0.100	8.02337	25.00000	Averaged
10	Naphthalene	50.00000	47.78753	5456	0.100	-4.42495	25.00000	Linear
11	2,5-Dibromotoluene (PID)	50.00000	54.35752	3726	0.100	8.71503	25.00000	Linear

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264073-9
Lab File ID : 2MJ10098.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0499
Analytical Date: 10/15/19 10:33
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
5	n-Pentane	4700	3954	3954	0.100	-15.86813	25.00000	Averaged	
6	2-Methylpentane	5229	4494	4494	0.100	-14.05117	25.00000	Averaged	
7	Methyl tert-butylether	4323	4299	4299	0.100	-0.56357	25.00000	Averaged	
8	2,2,4-Trimethylpentane	5664	4875	4875	0.100	-13.94418	25.00000	Averaged	
9	Benzene	7359	7407	7407	0.100	0.65643	25.00000	Averaged	
11	Toluene	7267	7384	7384	0.100	1.61644	25.00000	Averaged	
12	n-Nonane	5124	3744	3744	0.100	-26.93388	30.00000	Averaged	
13	n-Decane	4879	3378	3378	0.100	-30.75290	25.00000	Averaged	*
14	Ethylbenzene	6829	7077	7077	0.100	3.63541	25.00000	Averaged	
15	m+p-Xylene	7134	7324	7324	0.100	2.67236	25.00000	Averaged	
16	o-Xylene	7177	7411	7411	0.100	3.25226	25.00000	Averaged	
18	1,2,4-trimethylbenzene	6818	7138	7138	0.100	4.69238	25.00000	Averaged	
19	n-Butylcyclohexane	5508	4138	4138	0.100	-24.87379	25.00000	Averaged	
20	Naphthalene	50.00000	48.04628	4803	0.100	-3.90743	25.00000	Linear	
21	2,5-Dibromotoluene (FID)	50.00000	49.10097	1562	0.100	-1.79805	25.00000	Linear	

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264149-6
Lab File ID : 2MJ10099.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0499
Analytical Date: 10/15/19 12:11
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
2	Methyl tert-butylether	3403	3456	3456	0.100	1.54145	25.00000	Averaged	
3	Benzene	6875	7519	7519	0.100	9.36690	25.00000	Averaged	
4	Toluene	6184	6945	6945	0.100	12.30263	25.00000	Averaged	
5	Ethylbenzene	5271	6095	6095	0.100	15.63852	25.00000	Averaged	
6	m+p-Xylene	6116	7177	7177	0.100	17.34425	25.00000	Averaged	
7	o-Xylene	5435	6228	6228	0.100	14.59352	25.00000	Averaged	
8	1,2,4-trimethylbenzene	5491	6549	6549	0.100	19.25540	25.00000	Averaged	
10	Naphthalene	50.00000	56.21643	6447	0.100	12.43287	25.00000	Linear	
11	2,5-Dibromotoluene (PID)	50.00000	72.32222	4919	0.100	44.64444	25.00000	Linear	*

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264149-6
Lab File ID : 2MJ10099.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0499
Analytical Date: 10/15/19 12:11
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4700	4791	4791	0.100	1.94291	25.00000	Averaged
6	2-Methylpentane	5229	5683	5683	0.100	8.68741	25.00000	Averaged
7	Methyl tert-butylether	4323	4454	4454	0.100	3.01656	25.00000	Averaged
8	2,2,4-Trimethylpentane	5664	6418	6418	0.100	13.29724	25.00000	Averaged
9	Benzene	7359	7828	7828	0.100	6.37312	25.00000	Averaged
11	Toluene	7267	7797	7797	0.100	7.29938	25.00000	Averaged
12	n-Nonane	5124	5545	5545	0.100	8.21477	30.00000	Averaged
13	n-Decane	4879	4933	4933	0.100	1.10337	25.00000	Averaged
14	Ethylbenzene	6829	7526	7526	0.100	10.20424	25.00000	Averaged
15	m+p-Xylene	7134	7789	7789	0.100	9.18294	25.00000	Averaged
16	o-Xylene	7177	7865	7865	0.100	9.57817	25.00000	Averaged
18	1,2,4-trimethylbenzene	6818	7707	7707	0.100	13.04060	25.00000	Averaged
19	n-Butylcyclohexane	5508	5903	5903	0.100	7.18542	25.00000	Averaged
20	Naphthalene	50.00000	55.00031	5522	0.100	10.00062	25.00000	Linear
21	2,5-Dibromotoluene (FID)	50.00000	60.80850	2008	0.100	21.61700	25.00000	Linear

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264149-7
Lab File ID : 2MJ10121.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0499
Analytical Date: 10/16/19 08:59
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	3403	3679	3679	0.100	8.10370	25.00000	Averaged
3	Benzene	6875	7637	7637	0.100	11.08566	25.00000	Averaged
4	Toluene	6184	7036	7036	0.100	13.78093	25.00000	Averaged
5	Ethylbenzene	5271	6087	6087	0.100	15.47422	25.00000	Averaged
6	m+p-Xylene	6116	7123	7123	0.100	16.45337	25.00000	Averaged
7	o-Xylene	5435	6191	6191	0.100	13.91310	25.00000	Averaged
8	1,2,4-trimethylbenzene	5491	6361	6361	0.100	15.83845	25.00000	Averaged
10	Naphthalene	50.00000	51.88758	5938	0.100	3.77516	25.00000	Linear
11	2,5-Dibromotoluene (PID)	50.00000	45.22846	3120	0.100	-9.54308	25.00000	Linear

*** = Compound out of QC criteria**

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://katahdinlab.com
sales@katahdinlab.com

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264149-7
Lab File ID : 2MJ10121.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0499
Analytical Date: 10/16/19 08:59
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4700	4281	4281	0.100	-8.92660	25.00000	Averaged
6	2-Methylpentane	5229	5053	5053	0.100	-3.36594	25.00000	Averaged
7	Methyl tert-butylether	4323	4622	4622	0.100	6.91913	25.00000	Averaged
8	2,2,4-Trimethylpentane	5664	5647	5647	0.100	-0.31429	25.00000	Averaged
9	Benzene	7359	7927	7927	0.100	7.71811	25.00000	Averaged
11	Toluene	7267	7935	7935	0.100	9.19645	25.00000	Averaged
12	n-Nonane	5124	4540	4540	0.100	-11.40164	30.00000	Averaged
13	n-Decane	4879	3962	3962	0.100	-18.78804	25.00000	Averaged
14	Ethylbenzene	6829	7584	7584	0.100	11.05943	25.00000	Averaged
15	m+p-Xylene	7134	7866	7866	0.100	10.26206	25.00000	Averaged
16	o-Xylene	7177	7957	7957	0.100	10.85438	25.00000	Averaged
18	1,2,4-trimethylbenzene	6818	7613	7613	0.100	11.66395	25.00000	Averaged
19	n-Butylcyclohexane	5508	4940	4940	0.100	-10.31272	25.00000	Averaged
20	Naphthalene	50.00000	52.09516	5222	0.100	4.19032	25.00000	Linear
21	2,5-Dibromotoluene (FID)	50.00000	42.08600	1294	0.100	-15.82800	25.00000	Linear

*** = Compound out of QC criteria**

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http://katahdinlab.com
sales@katahdinlab.com

Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Instrument ID : GC02

SDG : TM0499

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG264520-4	10/11/19	16:53		31.284
Initial Calibration	WG264520-4	10/11/19	16:53	31.274	
Initial Calibration	WG264520-1	10/11/19	17:34		31.287
Initial Calibration	WG264520-1	10/11/19	17:34	31.271	
Initial Calibration	WG264520-2	10/11/19	18:17		31.299
Initial Calibration	WG264520-2	10/11/19	18:17	31.289	
Initial Calibration	WG264520-3	10/11/19	19:00		31.295
Initial Calibration	WG264520-3	10/11/19	19:00	31.285	
Initial Calibration	WG264520-5	10/11/19	19:43		31.296
Initial Calibration	WG264520-5	10/11/19	19:43	31.287	
Initial Calibration	WG264520-6	10/11/19	20:26		31.303
Initial Calibration	WG264520-6	10/11/19	20:26	31.293	
Independent Source	WG264520-7	10/11/19	21:10	31.29	31.299
Continuing Calibrati	WG264073-8	10/14/19	15:17	31.289	31.299
Method Blank Sample	WG264073-1RA	10/14/19	16:22	31.29	31.3
Laboratory Control S	WG264073-2RA	10/14/19	17:31	31.291	31.299
Laboratory Control S	WG264073-3RA	10/14/19	18:14	31.3	31.31
AAFES-2_FAL19	TM0499-1	10/14/19	22:27	31.295	31.309
XGM-94-04X_FAL19	TM0499-2	10/14/19	23:10	31.295	31.302
Matrix Spike	WG264073-4	10/15/19	07:46	31.285	31.296
Matrix Spike Duplica	WG264073-5	10/15/19	08:27	31.289	31.3
Continuing Calibrati	WG264073-9	10/15/19	10:33	31.286	31.297
Continuing Calibrati	WG264149-6	10/15/19	12:11	31.278	31.288
Method Blank Sample	WG264149-1	10/15/19	13:33	31.285	31.296
Laboratory Control S	WG264149-2	10/15/19	14:14	31.288	31.297
Laboratory Control S	WG264149-3	10/15/19	14:56	31.281	31.291
XGM-94-04X_FAL19	TM0499-2DL	10/16/19	06:54	31.287	31.301
AAFES-2_FAL19	TM0499-1DL	10/16/19	08:18	31.288	31.294
Continuing Calibrati	WG264149-7	10/16/19	08:59	31.286	31.297

360325-Boston 360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # DCL_FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments: On Ice
N: = native
WG = Ground water
NOTE; Pesticides/PCBs are combined (2-1L amber glass)
Metals are TOTAL metals include: Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, and Ag by 6010 and can be combined with Hg and As into 1-250 ml HNO3 preserved bottles/

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
1	2 x 1L amber glass bottles, Cool to <6°C
5	1 x 125mL plastic, Cool < 6°C
6	1 x 125mL, plastic, Cool < 6°C
9	1 x 250mL, plastic, HNO3, pH < 2, Cool < 6°C
21	1 x 2-1 Liter, amber, glass, Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C
47	1 x 500mL, amber glass, H2SO4, Cool < 6°C
48	1 x 250mL plastic, NaOH to pH >12, Cool < 6°C
49	1 x 500mL plastic, Cool < 6°C

Event: KOMAN, Long Term Monitoring, DCL Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: SW8082A - PCB (21)	SW9056A - Cl SO4 (5)	E410.4 - COD (47)	SW6010C - Ba Cd Cr Cu Fe Pb Mn Se (9)	SW6020A - As (9)	SW7470A - Mercury (9)	SW8081B - Pesticides (21)	A2320B - Alkalinity (46)	E353.2 - Nitrite Nitrate as N (47)	SW9012B - Cyanide (48)	A2540C - TDS (49)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	
11	LFM-99-02B_Fa19	WG	10/4/19	1135	MS	6	3	3	3	3	3	6	3	3	3	3	LFM-99-02B	N	14.50	25.83	MS/MSD
12																					
13																					
14																					
15																					
16																					
17																					
		Turnaround Time: 21 Days																			

680-175052 Chain of Custody

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1421
	10/4/19	1300
	10/4/19	1821

Received by: *(Signature)*	Date	Time
	10/4/19	1421
	10-4-19	1500

Shipping Date / Carrier / Airbill Number
3.7 (CF) 3.6°C

Received by Laboratory: *(Signature, Date, Time)* **& condition**
10-05-19 0925

Page 3 of 4

360325-Boston

CHAIN-OF-CUSTODY RECORD

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360325-Boston

COC # AOC43G-FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA 360325-Boston	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

NOTE: Metals are TOTAL metals
Only one (1) sample bottle is needed for both SW6010/6020.

N, Native
WG- Ground Water on Ice

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C

Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: SW6010C - Fe Mn	SW6020A - As	A2320B - Alkalinity	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
						9		46						
11	XGM-94-04X_FAL19	WG	10/2/19	1255	MM	3	3	3	XGM-94-04X	N	18.20	30.50	MS/MSD	
12	AAFES-2_FAL19	WG	10/2/19	1340	MM	1	1	1	AAFES-2	N	16.20	33.30		
13														
14														
15														
16														
17														
18														
		Turnaround Time:												

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1500
	10-4-19	

Received by: *(Signature)*	Date	Time
	10-4-19	1501

Shipping Date / Carrier / Airbill Number

3.7 (CF) 3.6°C

Received by Laboratory: *(Signature, Date, Time)* **& condition**

10-05-19 0935

360325-Boston 360325-Boston 360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
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COC # DCL_FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments:
N: = Native WG = Ground water On Ice
NOTE; Pesticides/PCBs are combined (2-1L amber glass)
Metals are TOTAL metals include: Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, and Ag by 6010 and can be combined with Hg and As into 1-250 ml HNO3 preserved bottles/

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
1	2 x 1L amber glass bottles, Cool to <6°C
5	1 x 125mL plastic, Cool < 6°C
6	1 x 125mL, plastic, Cool < 6°C
9	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
21	1 x 2-1 Liter, amber, glass, Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C
47	1 x 500mL, amber glass, H2SO4; Cool < 6°C
48	1 x 250mL plastic, NaOH to pH >12; Cool < 6°C
49	1 x 500mL plastic, Cool < 6°C

Event: KOMAN, Long Term Monitoring, DCL Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: SW8082A - PCB (21)	SW9056A - Cl SO4 (5)	E410.4 - COD (47 ~~6~~)	SW6010C - Ba Cd Cr Cu Fe Pb Mn Se (9)	SW6020A - As (9)	SW7470A - Mercury (9)	SW8081B - Pesticides (21)	A2320B - Alkalinity (46)	E353.2 - Nitrite Nitrate as N (47)	SW9012B - Cyanide (48)	A2540C - TDS (49)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	
11	LFM-99-02B_Fal19	WG	10/4/19	1135	MS	6	3	3	3	3	3	6	3	3	3	3	LFM-99-02B	N	14.50	25.83	MS/MSD
12																					
13																					
14																					
15																					
16																					
17																					
		Turnaround Time: 21 Days																			

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1421
	10/4/19	1700
	10/4/19	1821

Received by: *(Signature)*	Date	Time
	10/4/19	1421
	10-4-19	1500
	10/5/19	0900

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* & condition

360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

TMOSOO

KOMAN Government Services, LLC
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COC # DCL_FAL19

360325-Boston

KGS

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, DCL Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number, insert	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:
on ICE
Ni = Native
WG Ground water

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2 x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6°C
4	2 x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6°C

Event: KOMAN, Long Term Monitoring, DCL Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: MADEPEP - EPH with PAHs	Analytical Test Method: MADEPVP - VPH with targets	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	~~LFM-03-07_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-03-07~~	N1	10.90	~~20.90~~		1
2	~~LFM-99-02B_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-99-02B~~	~~N1~~	~~14.50~~	~~25.83~~		1
3	~~LFM-99-05A_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-99-05A~~	~~N1~~	~~19.00~~	~~28.88~~		1
4	~~LFM-DUP-01_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-99-05A~~	~~FD1~~	~~19.00~~	~~29.56~~		1
5	~~LFM-99-06ARP_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-99-06ARP~~	~~N1~~	~~10.09~~	~~18.39~~		1
6	LFM-99-02B_Fall9	WG	10/4/19	1135	MS	6	9	LFM-99-02B	N1	14.50	25.83		
7													
8													
9													
10													
		Turnaround Time: 21 Days											

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1421
	10/4/19	1500
	10-4-19	1700
FedEx		

Received by: *(Signature)*	Date	Time
	10/4/19	1421
	10-4-19	1500
FedEx		
A. Brewer	10/5/19	1225

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
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(508) 508.366.7442, lekes@komangs.com

COC # AOC43G-FAL19

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

NOTE: Metals are TOTAL metals
Only one (1) sample bottle is needed for both SW6010/6020.

N, Native
WG- Ground Water on Ice

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2, Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: SW6010C - Fe Mn	SW6020A - As	A2320B - Alkalinity	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019					9		46						
11	XGM-94-04X_FAL19	WG	10/2/19	1255	MM	3	3	3	XGM-94-04X	N	18.20	30.50	MS/MSD	
12	AAFES-2_FAL19	WG	10/2/19	1340	MM	1	1	1	AAFES-2	N	16.20	33.30		
13														
14														
15														
16														
17														
18														
		Turnaround Time:												

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
	10/4/19	1500		10-4-19	1500
	10-4-19	[illegible]		10/5/19	0900

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

CHAIN-OF-CUSTODY RECORD

360325-Boston 360325-Boston 360325-Boston

~~TM0469~~ JCB 10/7 TM0499

KOMAN Government Services, LLC
Laurie Ekes
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COC # AOC43G-FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number,	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:
on ICE
WG= Groundwater
N1 = Native

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
4	2 x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6°C

Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019 — Analytical Test Method: MADEPVP - VPH with targets: 4

	Sample ID	Matrix	Date	Time	Samp Init.		Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler	
1	AAFES-2_FAL19	WG	10/2/19	1340	MM	X	AAFES-2	N1	16.20	33.30		1	2
2	~~XGM-93-02X_FAL19~~	~~WG~~				~~X~~	~~XGM-93-02X~~	~~N1~~	~~28.00~~	~~38.00~~		1	
3	XGM-94-04X_FAL19	WG	10/2/19	1255	MM	X	XGM-94-04X	N1	18.20	30.50	MS/MSD (6 Bottles)	1	4
4	~~XGM-97-12X_FAL19~~	~~WG~~				~~X~~	~~XGM-97-12X~~	~~N1~~	~~24.00~~	~~34.00~~		1	
5													
6													
7													
8													
9													
10													
		Turnaround Time:											

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
[signature]	10/4/19	1500	[signature]	10-4-19	1501
[signature]	10-4-19	1800	Fed Ex		
Fed Ex			[signature]	100519	12:20

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175052-3

Login Number: 175052
List Number: 1
Creator: Banda, Christy S

List Source: Eurofins TestAmerica, Savannah

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

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175052-3

Login Number: 175052
List Number: 2
Creator: Zimmerman, Steven M

List Source: Eurofins TestAmerica, Denver
List Creation: 10/08/19 01:14 PM

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

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175052-3

Login Number: 175052
List Number: 3
Creator: Zimmerman, Steven M

List Source: Eurofins TestAmerica, Denver
List Creation: 10/08/19 01:18 PM

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175052-3
Project/Site: LTM / AOC 43G FII 2019

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	SAVLAB	
Alabama	State	41450	06-30-20
Alaska	State	GA00006	06-30-20
Alaska (UST)	State	17-016	09-30-20
ANAB	Dept. of Defense ELAP	L2463	09-22-22
ANAB	ISO/IEC 17025	L2463.01	09-22-22
Arizona	State	AZ0808	12-14-19
Arkansas DEQ	State	19-015-0	02-01-20
California	State	2939	06-30-20
Colorado	State	GA00006	12-31-19
Connecticut	State	PH-0161	03-31-21
Florida	NELAP	E87052	06-30-20
GA Dept. of Agriculture	State Program	N/A	06-12-20
Georgia	State	E87052	06-30-20
Georgia (DW)	State	803	06-30-20
Guam	State	19-007R	04-17-20
Hawaii	State	<cert No.>	06-30-20
Indiana	State	C-GA-02	06-30-20
Iowa	State	353	09-22-20
Kansas	NELAP	E-10322	10-15-20
Kentucky (DW)	State	KY90084	12-31-19
Kentucky (UST)	State	<cert No.>	06-30-20
Kentucky (WW)	State	KY90084	12-31-19
Louisiana	NELAP	02011	06-30-20
Louisiana (DW)	State	LA009	12-31-19
Maine	State	GA00006	09-26-20
Maryland	State	250	12-31-19
Massachusetts	State	M-GA006	06-30-20
Michigan	State	9925	06-30-20
Mississippi	State	<cert No.>	06-30-20
Nebraska	State	NE-OS-7-04	06-30-20
New Hampshire	NELAP	2096	05-29-20
New Jersey	NELAP	GA769	06-30-20
New Mexico	State	GA00006	06-30-20
New York	NELAP	10842	04-01-20
North Carolina (DW)	State	13701	07-31-20
North Carolina (WW/SW)	State	269	12-31-19
Oklahoma	State	9984	08-31-20
Pennsylvania	NELAP	68-00474	06-30-20
Puerto Rico	State	GA00006	01-01-20
South Carolina	State	98001	06-30-20
Tennessee	State	02961	06-30-20
Texas	NELAP	T1047004185-19-14	11-30-19
Texas	TCEQ Water Supply	T104704185	09-23-20
US Fish & Wildlife	US Federal Programs	LE058448-0	07-31-20
Virginia	NELAP	10509	06-14-20
Washington	State	C805	06-10-20
West Virginia (DW)	State	9950C	12-31-19
West Virginia DEP	State	094	11-30-19
Wisconsin	State	999819810	08-31-20

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175052-3
Project/Site: LTM / AOC 43G FII 2019

Laboratory: Eurofins TestAmerica, Savannah (Continued)

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

Authority	Program	Identification Number	Expiration Date
Wyoming	State	8TMS-L	06-30-20 *

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-175305-2
Client Project/Site: LTM/AOC 43G Fall 2019

For:
KOMAN Government Solutions, LLC
293 Boston Post Road West
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Authorized for release by:
11/16/2019 12:22:28 PM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

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

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

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

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Job ID: 680-175305-2

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: LTM/AOC 43G Fall 2019

Report Number: 680-175305-2

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 the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 10/11/2019 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.5º C, 1.3º C, 1.4º C and 3.1º C.

METALS (ICP)

Samples XGM-93-02X_FAL19 (680-175305-4), XGM-97-12X_FAL19 (680-175305-5), XGM-DUP1_FAL19 (680-175305-6) and 43G-EB_100919 (680-175305-7) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/14/2019 and analyzed on 10/17/2019.

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

METALS

Samples XGM-93-02X_FAL19 (680-175305-4), XGM-97-12X_FAL19 (680-175305-5), XGM-DUP1_FAL19 (680-175305-6) and 43G-EB_100919 (680-175305-7) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 10/14/2019 and analyzed on 10/14/2019 and 10/15/2019.

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

ALKALINITY

Samples XGM-93-02X_FAL19 (680-175305-4), XGM-97-12X_FAL19 (680-175305-5), XGM-DUP1_FAL19 (680-175305-6) and 43G-EB_100919 (680-175305-7) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 10/21/2019.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/AOC 43G Fall 2019

Job ID: 680-175305-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-175305-4	XGM-93-02X_FAL19	WG	10/09/19 09:55	10/11/19 09:10	
680-175305-5	XGM-97-12X_FAL19	WG	10/09/19 11:20	10/11/19 09:10	
680-175305-6	XGM-DUP1_FAL19	WG	10/09/19 11:25	10/11/19 09:10	
680-175305-7	43G-EB_100919	WQ	10/09/19 12:15	10/11/19 09:10	

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/AOC 43G Fall 2019

Job ID: 680-175305-2

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
MA-VPH	MADEP VPH Volatile Petroleum Hydrocarbon	MA DEP	
3010A	Preparation, Total Metals	SW846	TAL SAV

Protocol References:

MA DEP = Massachusetts Department Of Environmental Protection

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

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

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Definitions/Glossary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/AOC 43G Fall 2019

Job ID: 680-175305-2

Qualifiers

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

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

Client Sample ID: XGM-93-02X_FAL19

Lab Sample ID: 680-175305-4
Date Collected: 10/09/19 09:55
Matrix: WG
Date Received: 10/11/19 09:10

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	9300		50	50	17	ug/L		10/17/19 20:42	1
Manganese	1300		10	3.0	1.0	ug/L		10/17/19 20:42	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	5.2		3.0	3.0	1.5	ug/L		10/14/19 23:46	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	170		10	10	3.1	mg/L		10/21/19 14:17	1

Client Sample ID: XGM-97-12X_FAL19

Lab Sample ID: 680-175305-5
Date Collected: 10/09/19 11:20
Matrix: WG
Date Received: 10/11/19 09:10

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	6200		50	50	17	ug/L		10/17/19 20:56	1
Manganese	250		10	3.0	1.0	ug/L		10/17/19 20:56	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	18		3.0	3.0	1.5	ug/L		10/15/19 00:01	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	66		10	10	3.1	mg/L		10/21/19 14:31	1

Client Sample ID: XGM-DUP1_FAL19

Lab Sample ID: 680-175305-6
Date Collected: 10/09/19 11:25
Matrix: WG
Date Received: 10/11/19 09:10

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	6500		50	50	17	ug/L		10/17/19 20:33	1
Manganese	260		10	3.0	1.0	ug/L		10/17/19 20:33	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	23		3.0	3.0	1.5	ug/L		10/14/19 23:13	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	66		10	10	3.1	mg/L		10/21/19 14:37	1

Client Sample ID: 43G-EB_100919

Lab Sample ID: 680-175305-7
Date Collected: 10/09/19 12:15
Matrix: WQ
Date Received: 10/11/19 09:10

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	50	U	50	50	17	ug/L		10/17/19 20:02	1

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/AOC 43G Fall 2019

Job ID: 680-175305-2

Client Sample ID: 43G-EB_100919
Date Collected: 10/09/19 12:15
Date Received: 10/11/19 09:10

Lab Sample ID: 680-175305-7
Matrix: WQ

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	3.0	U	10	3.0	1.0	ug/L		10/17/19 20:02	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/14/19 22:54	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	10	U	10	10	3.1	mg/L		10/21/19 14:44	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-590767/1-A
Matrix: Water
Analysis Batch: 591674

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 590767

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	50	U	50	50	17	ug/L		10/17/19 19:52	1
Manganese	3.0	U	10	3.0	1.0	ug/L		10/17/19 19:52	1

Lab Sample ID: LCS 680-590767/2-A
Matrix: Water
Analysis Batch: 591674

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 590767

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5010	5110		ug/L		102	87 - 115
Manganese	400	410		ug/L		102	90 - 114

Lab Sample ID: 680-175305-7 MS
Matrix: WQ
Analysis Batch: 591674

Client Sample ID: 43G-EB_100919
Prep Type: Total/NA
Prep Batch: 590767

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	50	U	5010	4980		ug/L		99	87 - 115
Manganese	3.0	U	400	399		ug/L		100	90 - 114

Lab Sample ID: 680-175305-7 MSD
Matrix: WQ
Analysis Batch: 591674

Client Sample ID: 43G-EB_100919
Prep Type: Total/NA
Prep Batch: 590767

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	50	U	5010	4990		ug/L		100	87 - 115	0	20
Manganese	3.0	U	400	400		ug/L		100	90 - 114	0	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-590766/1-A
Matrix: Water
Analysis Batch: 591017

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 590766

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/14/19 22:47	1

Lab Sample ID: LCS 680-590766/2-A
Matrix: Water
Analysis Batch: 591017

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 590766

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	92.2		ug/L		92	84 - 116

Lab Sample ID: 680-175305-7 MS
Matrix: WQ
Analysis Batch: 591017

Client Sample ID: 43G-EB_100919
Prep Type: Total/NA
Prep Batch: 590766

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	3.0	U	100	98.3		ug/L		98	84 - 116

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 680-175305-7 MSD
Matrix: WQ
Analysis Batch: 591017

Client Sample ID: 43G-EB_100919
Prep Type: Total/NA
Prep Batch: 590766

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.0	U	100	107		ug/L		107	84 - 116	8	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-474862/5
Matrix: Water
Analysis Batch: 474862

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	10	U	10	10	3.1	mg/L		10/21/19 14:10	1

Lab Sample ID: LCS 280-474862/4
Matrix: Water
Analysis Batch: 474862

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			200	204		mg/L		102	89 - 109		

Lab Sample ID: 680-175305-4 DU
Matrix: WG
Analysis Batch: 474862

Client Sample ID: XGM-93-02X_FAL19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Alkalinity	170			166		mg/L				0.4	10

Metals

Prep Batch: 590766

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-4	XGM-93-02X_FAL19	Total/NA	WG	3010A	
680-175305-5	XGM-97-12X_FAL19	Total/NA	WG	3010A	
680-175305-6	XGM-DUP1_FAL19	Total/NA	WG	3010A	
680-175305-7	43G-EB_100919	Total/NA	WQ	3010A	
MB 680-590766/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-590766/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-175305-7 MS	43G-EB_100919	Total/NA	WQ	3010A	
680-175305-7 MSD	43G-EB_100919	Total/NA	WQ	3010A	

Prep Batch: 590767

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-4	XGM-93-02X_FAL19	Total/NA	WG	3010A	
680-175305-5	XGM-97-12X_FAL19	Total/NA	WG	3010A	
680-175305-6	XGM-DUP1_FAL19	Total/NA	WG	3010A	
680-175305-7	43G-EB_100919	Total/NA	WQ	3010A	
MB 680-590767/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-590767/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-175305-7 MS	43G-EB_100919	Total/NA	WQ	3010A	
680-175305-7 MSD	43G-EB_100919	Total/NA	WQ	3010A	

Analysis Batch: 591017

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-4	XGM-93-02X_FAL19	Total/NA	WG	6020A	590766
680-175305-5	XGM-97-12X_FAL19	Total/NA	WG	6020A	590766
680-175305-6	XGM-DUP1_FAL19	Total/NA	WG	6020A	590766
680-175305-7	43G-EB_100919	Total/NA	WQ	6020A	590766
MB 680-590766/1-A	Method Blank	Total/NA	Water	6020A	590766
LCS 680-590766/2-A	Lab Control Sample	Total/NA	Water	6020A	590766
680-175305-7 MS	43G-EB_100919	Total/NA	WQ	6020A	590766
680-175305-7 MSD	43G-EB_100919	Total/NA	WQ	6020A	590766

Analysis Batch: 591674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-4	XGM-93-02X_FAL19	Total/NA	WG	6010C	590767
680-175305-5	XGM-97-12X_FAL19	Total/NA	WG	6010C	590767
680-175305-6	XGM-DUP1_FAL19	Total/NA	WG	6010C	590767
680-175305-7	43G-EB_100919	Total/NA	WQ	6010C	590767
MB 680-590767/1-A	Method Blank	Total/NA	Water	6010C	590767
LCS 680-590767/2-A	Lab Control Sample	Total/NA	Water	6010C	590767
680-175305-7 MS	43G-EB_100919	Total/NA	WQ	6010C	590767
680-175305-7 MSD	43G-EB_100919	Total/NA	WQ	6010C	590767

General Chemistry

Analysis Batch: 474862

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-4	XGM-93-02X_FAL19	Total/NA	WG	SM 2320B	
680-175305-5	XGM-97-12X_FAL19	Total/NA	WG	SM 2320B	
680-175305-6	XGM-DUP1_FAL19	Total/NA	WG	SM 2320B	
680-175305-7	43G-EB_100919	Total/NA	WQ	SM 2320B	
MB 280-474862/5	Method Blank	Total/NA	Water	SM 2320B	

General Chemistry (Continued)

Analysis Batch: 474862 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 280-474862/4	Lab Control Sample	Total/NA	Water	SM 2320B	
680-175305-4 DU	XGM-93-02X_FAL19	Total/NA	WG	SM 2320B	

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/AOC 43G Fall 2019

Job ID: 680-175305-2

Client Sample ID: XGM-93-02X_FAL19

Lab Sample ID: 680-175305-4
Date Collected: 10/09/19 09:55
Matrix: WG
Date Received: 10/11/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	590767	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6010C		1			591674	10/17/19 20:42	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	590766	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6020A		1			591017	10/14/19 23:46	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			474862	10/21/19 14:17	SPG	TAL DEN
	Instrument ID: WC_AT2									

Client Sample ID: XGM-97-12X_FAL19

Lab Sample ID: 680-175305-5
Date Collected: 10/09/19 11:20
Matrix: WG
Date Received: 10/11/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	590767	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6010C		1			591674	10/17/19 20:56	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	590766	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6020A		1			591017	10/15/19 00:01	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			474862	10/21/19 14:31	SPG	TAL DEN
	Instrument ID: WC_AT2									

Client Sample ID: XGM-DUP1_FAL19

Lab Sample ID: 680-175305-6
Date Collected: 10/09/19 11:25
Matrix: WG
Date Received: 10/11/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	590767	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6010C		1			591674	10/17/19 20:33	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	590766	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6020A		1			591017	10/14/19 23:13	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			474862	10/21/19 14:37	SPG	TAL DEN
	Instrument ID: WC_AT2									

Client Sample ID: 43G-EB_100919

Lab Sample ID: 680-175305-7
Date Collected: 10/09/19 12:15
Matrix: WQ
Date Received: 10/11/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	590767	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6010C		1			591674	10/17/19 20:02	BCB	TAL SAV
	Instrument ID: ICPE									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/AOC 43G Fall 2019

Job ID: 680-175305-2

Client Sample ID: 43G-EB_100919

Date Collected: 10/09/19 12:15
Date Received: 10/11/19 09:10

Lab Sample ID: 680-175305-7

Matrix: WQ

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	250 mL	590766	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6020A		1			591017	10/14/19 22:54	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Analysis	SM 2320B		1			474862	10/21/19 14:44	SPG	TAL DEN
	Instrument ID: WC_AT2									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: Fort Devens RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
TM0709-1, 2, 3 & 4

Matrices: X Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 11/11/2019

TEST AMERICA SAVANNAH
DEVNS-LTM AOC 43G FALL 2019
TM0709

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
DEVNS-LTM AOC 43G FALL 2019
TM0709

Sample Receipt

The following samples were received on October 11, 2019 and were logged in under Katahdin Analytical Services work order number TM0709 for a hardcopy due date of October 30, 2019.

KATAHDIN Sample No.	TEST AMERICA SAVANNAH Sample Identification
TM0709-1	XGM-93-02X_FAL19
TM0709-2	XGM-97-12X_FAL19
TM0709-3	XGM-DUP1_FAL19
TM0709-4	43G-EB-100919

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of work order TM0709 were analyzed in accordance with Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

MA-VPH Analysis

Samples TM0709-1, 2, 2DL, 3, and 3DL were manually integrated for the target analytes ethylbenzene, m+p-xylene, o-xylene, naphthalene, the C9-C10 aromatic range, the C5-C8 and/or C9-C12 aliphatic ranges, and/or the surrogate 2,5-dibromotoluene on the PID and/or FID. The specific reasons for the manual integrations are indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

The target analyte naphthalene was detected below ½ the LOQ in the method blank, WG264423-1. According to the DoD QSM, a method blank is considered to be contaminated if the concentration of any target analyte in the blank exceeds ½ the reporting limit and is greater than 1/10 the amount measured in any sample, or 1/10 the regulatory limit (whichever is greater). Since the method blank was acceptable, no further action was taken.

The method blanks, WG264423-1 and WG264714-1, had high recoveries of the surrogate 2,5-dibromotoluene on the PID that were outside the method acceptance limits. Since a high recovery would indicate a high bias, and no analytes or ranges were detected above the LOQ in the method blanks, no further action was taken.

The calibration verification standards (CV) (files 2MJ10159, 2MJ10181, and 2MJ10204) had high responses for the surrogate 2,5-dibromotoluene on the PID and/or FID that resulted in %Ds that exceeded the method acceptance limits of ± 25%. Since the target analyte and range responses were acceptable, no further action was taken.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond 11.08.19

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC. Sample Receipt Condition Report

Client: Koman	KAS PM: TMM	Sampled By: Client	
Project:	KIMS Entry By: JLB	Delivered By: Fedex	
KAS Work Order#: TM0708 / 0709	KIMS Review By: TMM	Received By: JLB	
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 10.11.19 0945	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?					
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?					
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.					Temp (°C): 0.8 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment: Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11 Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

TM0709

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC43G-FAL19

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number,	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
4	2 x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6°C

Analytical Test Method: MADEPVP - VPH with targets

Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019 — 4

	Sample ID	Matrix	Date	Time	Samp Init.		Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
11	XGM-93-02X-FAL19	WG	10/9/19	0955	BrA	x	XGM-93-02X	N				
12	XGM-97-12X-FAL19	WG	10/9/19	1120	BrA	x	XGM-97-12X	N				
13	XGM-DUP1-FAL19	WG	10/9/19	1125	BrA	x	Field Dup	FD				
14	43G-EB-100919	WQ	10/9/19	1215	BrA	x	EB	EB				
15	~~TripBlank-100919~~	~~WG~~	~~10/9/19~~		~~BrA~~	~~x~~	~~Trip Blank~~	~~TB~~				
16												
17												
18												
		Turnaround Time:										

Relinquished by: *(Signature)*	Date	Time
BrA	10/9/19	1450
	10/10/19	1700

Received by: *(Signature)*	Date	Time
	10/10/19	1430

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

10.11.19 0945 0.8 °C

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Nov. 13, 2019
12:58 PM

Login Number: TM0709

Account: TASAV001
Test America Savannah

Project: TASAV-DEVENS

NoWeb

Quote/Incoming:

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.1 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative. VPH undetect ethylbenzene, see work order SL3114.
CHECK NO.		
CLIENT PO#	:	3056543
CLIENT PROJECT MANAGE		
CONTRACT		
COOLER TEMPERATURE	:	0.8
DELIVERY SERVICES	:	FedEx
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS	:	JCB
PM	:	HHM
PROJECT NAME	:	DEVNS-LTM AOC 43G Fall 2019
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF, EDD and invoice to Jerry. No HC.

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0709-1	XGM-93-02X_FAL19	09-OCT-19 09:55	11-OCT-19			30-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	23-OCT-19	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0709-2	XGM-97-12X_FAL19	09-OCT-19 11:20	11-OCT-19			30-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	23-OCT-19	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0709-3	XGM-DUP1_FAL19	09-OCT-19 11:25	11-OCT-19			30-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	23-OCT-19	40mL Vial+HCl		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0709-4	43G-EB-100919	09-OCT-19 12:15	11-OCT-19			30-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	23-OCT-19	40mL Vial+HCl		

Total Samples: *4* ***Total Analyses:*** *4*

JLP
11-13-19

SAMPLE DATA SUMMARY PACKAGE

1
2
3
4
5
6
7
8
9
10
11
12
13
14

1 2 3 4 5 6 7 8 9 10 11 12 13 14

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0709-1
Client ID: XGM-93-02X_FAL19
Project: DEVNS-LTM AOC 43G Fall 2019
SDG: TM0709
Lab File ID: 2MJ10164.D

Sample Date: 09-OCT-19
Received Date: 11-OCT-19
Extract Date: 18-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264423

Analysis Date: 18-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 13-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics		210	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	J	79	ug/L	1	100	100	50.	75.
C9-C10 Aromatics		100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	J	2.2	ug/L	1	5	5.0	0.31	3.8
Naphthalene	J	1.8	ug/L	1	5	5.0	1.6	3.8
Toluene	J	0.92	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		88.8	%					
2,5-Dibromotoluene (PID)		102.	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0709-2
Client ID: XGM-97-12X_FAL19
Project: DEVNS-LTM AOC 43G Fall 2019
SDG: TM0709
Lab File ID: 2MJ10165.D

Sample Date: 09-OCT-19
Received Date: 11-OCT-19
Extract Date: 18-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264423

Analysis Date: 18-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 13-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics		350	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	E	260	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	E	400	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	J	2.1	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene		11	ug/L	1	5	5.0	1.6	3.8
Toluene	J	1.6	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	J	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	J	1.6	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		94.7	%					
2,5-Dibromotoluene (PID)		109.	%					

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0709-2DL
Client ID: XGM-97-12X_FAL19
Project: DEVNS-LTM AOC 43G Fall 2019
SDG: TM0709
Lab File ID: 2MJ10202.D

Sample Date: 09-OCT-19
Received Date: 11-OCT-19
Extract Date: 23-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264714

Analysis Date: 23-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 13-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	J	150	ug/L	2	100	200	100	150
C9-C12 Aliphatics	J	150	ug/L	2	100	200	100	150
C9-C10 Aromatics		340	ug/L	2	100	200	100	150
Benzene	U	6.0	ug/L	2	3	6.0	0.62	4.0
Ethylbenzene	J	1.9	ug/L	2	5	10.	0.84	7.6
Methyl tert-butylether	J	1.2	ug/L	2	5	10.	0.62	7.6
Naphthalene		13	ug/L	2	5	10.	3.2	7.6
Toluene	J	0.84	ug/L	2	5	10.	0.68	7.6
m+p-Xylenes	J	8.8	ug/L	2	10	20.	1.8	15.
o-Xylene	J	1.1	ug/L	2	5	10.	0.94	7.6
2,5-Dibromotoluene (FID)		105.	%					
2,5-Dibromotoluene (PID)		117.	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0709-3
Client ID: XGM-DUP1_FAL19
Project: DEVNS-LTM AOC 43G Fall 2019
SDG: TM0709
Lab File ID: 2MJ10166.D

Sample Date: 09-OCT-19
Received Date: 11-OCT-19
Extract Date: 18-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264423

Analysis Date: 18-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 13-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics		360	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	E	280	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	E	440	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	J	2.7	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene		13	ug/L	1	5	5.0	1.6	3.8
Toluene	J	1.7	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes		13	ug/L	1	10	10.	0.92	7.5
o-Xylene	J	1.7	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		99.9	%					
2,5-Dibromotoluene (PID)		114.	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0709-3DL
Client ID: XGM-DUP1_FAL19
Project: DEVNS-LTM AOC 43G Fall 2019
SDG: TM0709
Lab File ID: 2MJ10203.D

Sample Date: 09-OCT-19
Received Date: 11-OCT-19
Extract Date: 23-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264714

Analysis Date: 23-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 13-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	J	140	ug/L	2	100	200	100	150
C9-C12 Aliphatics	J	160	ug/L	2	100	200	100	150
C9-C10 Aromatics		340	ug/L	2	100	200	100	150
Benzene	U	6.0	ug/L	2	3	6.0	0.62	4.0
Ethylbenzene	J	1.8	ug/L	2	5	10.	0.84	7.6
Methyl tert-butylether	J	1.1	ug/L	2	5	10.	0.62	7.6
Naphthalene		12	ug/L	2	5	10.	3.2	7.6
Toluene	J	0.72	ug/L	2	5	10.	0.68	7.6
m+p-Xylenes	J	8.9	ug/L	2	10	20.	1.8	15.
o-Xylene	J	1.0	ug/L	2	5	10.	0.94	7.6
2,5-Dibromotoluene (FID)		89.0	%					
2,5-Dibromotoluene (PID)		101.	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0709-4
Client ID: 43G-EB-100919
Project: DEVNS-LTM AOC 43G Fall 2019
SDG: TM0709
Lab File ID: 2MJ10163.D

Sample Date: 09-OCT-19
Received Date: 11-OCT-19
Extract Date: 18-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264423

Analysis Date: 18-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 13-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	J	1.6	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		101.	%					
2,5-Dibromotoluene (PID)		114.	%					

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Report of Analytical Results

Client:
Lab ID: WG264423-1
Client ID: Method Blank Sample
Project:
SDG: TM0709
Lab File ID: 2MJ10160.D

Sample Date:
Received Date:
Extract Date: 18-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264423

Analysis Date: 18-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 07-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	J	1.6	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		116.	%					
2,5-Dibromotoluene (PID)	*	132.	%					

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Report of Analytical Results

Client:
Lab ID: WG264714-1
Client ID: Method Blank Sample
Project:
SDG: TM0709
Lab File ID: 2MJ10184.D

Sample Date:
Received Date:
Extract Date: 22-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264714

Analysis Date: 22-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 07-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		117.	%					
2,5-Dibromotoluene (PID)	*	136.	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** DEVNS-LTM AOC 43G Fall 2019 **Matrix:** AQ
Lab Code: KAS **SDG:** TM0709

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
XGM-93-02X_FAL19	TM0709-1	B	88.8		102.	
XGM-97-12X_FAL19	TM0709-2	B	94.7		109.	
XGM-97-12X_FAL19	TM0709-2DL	B	105.		117.	
XGM-DUP1_FAL19	TM0709-3	B	99.9		114.	
XGM-DUP1_FAL19	TM0709-3DL	B	89.0		101.	
43G-EB-100919	TM0709-4	B	101.		114.	
Method Blank Sample	WG264423-1	B	116.		132.	*
Laboratory Control S	WG264423-2	B	110.		125.	
Laboratory Control S	WG264423-3	B	108.		124.	
Method Blank Sample	WG264714-1	B	117.		136.	*
Laboratory Control S	WG264714-2	B	96.7		113.	
Laboratory Control S	WG264714-3	B	89.5		105.	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG264423-2
LCSD ID: WG264423-3
Project:
SDG: TM0709
Report Date: 07-NOV-19
LCS File ID: 2MJ10161.D

Received Date:
Extract Date: 18-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264423
LCSD File ID: 2MJ10162.D

Analysis Date: 18-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	340.	113.	309.	103.	ug/L	10	25	70-130
C9-C12 Aliphatics	200.	248.	124.	228.	114.	ug/L	8	25	70-130
C9-C10 Aromatics	100.	114.	114.	113.	113.	ug/L	1	25	70-130
Benzene	100.	105.	105.	104.	104.	ug/L	1	25	70-130
Ethylbenzene	100.	112.	112.	110.	110.	ug/L	2	25	70-130
Methyl tert-butylether	100.	97.8	97.8	96.3	96.3	ug/L	2	25	70-130
Naphthalene	100.	110.	110.	108.	108.	ug/L	2	25	70-130
Toluene	100.	107.	107.	106.	106.	ug/L	1	25	70-130
m+p-Xylenes	200.	205.	102.	203.	102.	ug/L	1	25	70-130
o-Xylene	100.	108.	108.	106.	106.	ug/L	2	25	70-130
2,5-Dibromotoluene (FID)			110.		108.				70-130
2,5-Dibromotoluene (PID)			125.		124.				70-130

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Katahdin
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LCS/LCSD Recovery Report

LCS ID: WG264714-2
LCSD ID: WG264714-3
Project:
SDG: TM0709
Report Date: 07-NOV-19
LCS File ID: 2MJ10185.D

Received Date:
Extract Date: 22-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264714
LCSD File ID: 2MJ10186.D

Analysis Date: 22-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	312.	104.	303.	101.	ug/L	3	25	70-130
C9-C12 Aliphatics	200.	233.	116.	231.	116.	ug/L	1	25	70-130
C9-C10 Aromatics	100.	111.	111.	116.	116.	ug/L	4	25	70-130
Benzene	100.	103.	103.	104.	104.	ug/L	1	25	70-130
Ethylbenzene	100.	109.	109.	110.	110.	ug/L	1	25	70-130
Methyl tert-butylether	100.	96.6	96.6	98.4	98.4	ug/L	2	25	70-130
Naphthalene	100.	104.	104.	104.	104.	ug/L	0	25	70-130
Toluene	100.	105.	105.	105.	105.	ug/L	0	25	70-130
m+p-Xylenes	200.	201.	100.	200.	100.	ug/L	0	25	70-130
o-Xylene	100.	106.	106.	106.	106.	ug/L	0	25	70-130
2,5-Dibromotoluene (FID)			96.7		89.5				70-130
2,5-Dibromotoluene (PID)			113.		105.				70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM AOC 43G Fall 2019
Lab File ID : 2MJ10160.D
Instrument ID : GC02

SDG : TM0709
Lab Sample ID : WG264423-1
Date Analyzed : 18-OCT-19
Time Analyzed : 11:26
Date Extracted : 18-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG264423-2	2MJ10161..	10/18/19	12:08
Laboratory Control S	WG264423-3	2MJ10162..	10/18/19	12:49
43G-EB-100919	TM0709-4	2MJ10163..	10/18/19	16:33
XGM-93-02X_FAL19	TM0709-1	2MJ10164..	10/18/19	17:14
XGM-97-12X_FAL19	TM0709-2	2MJ10165..	10/18/19	17:56
XGM-DUP1_FAL19	TM0709-3	2MJ10166..	10/18/19	18:39

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM AOC 43G Fall 2019
Lab File ID : 2MJ10184.D
Instrument ID : GC02

SDG : TM0709
Lab Sample ID : WG264714-1
Date Analyzed : 22-OCT-19
Time Analyzed : 10:31
Date Extracted : 22-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG264714-2	2MJ10185.	10/22/19	11:13
Laboratory Control S	WG264714-3	2MJ10186.	10/22/19	11:55
XGM-97-12X_FAL19	TM0709-2DL	2MJ10202.	10/23/19	02:08
XGM-DUP1_FAL19	TM0709-3DL	2MJ10203.	10/23/19	02:51

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0709
Project : DEVNS-LTM AOC 43G Fall 2019 **Instrument ID:** GC02
Lab File IDs : 2MJ10063.D 2MJ10064.D 2MJ10065.D **Calibration Date(s):** 11-OCT-19 16:53
2MJ10062.D 2MJ10066.D 2MJ10067.D 11-OCT-19 20:26

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Crv					Max	
	1.0000	5.0000	10.0000	50.0000	100.0000	300.0000	New	b	m1	m2	%RSD	%RSD	
C5-C8 Aliphatic	5077	5269	5414	5221	5031	5175	AVG		5198		2.65631	25.00000	M (
C9-C12 Aliphatic	5787	4675	4727	4766	5207	5998	AVG		5193		11.1221(	25.00000	M (
n-Pentane	4746	4710	5109	4591	4417	4628	AVG		4700		4.91166	25.00000	O
2-Methylpentane	5241	5337	5288	5265	5070	5174	AVG		5229		1.81279	25.00000	O
Methyl tert-butylether	4332	4733	4377	4243	4265	3990	AVG		4323		5.58226	25.00000	O
2,2,4-Trimethylpentane	5245	5762	5845	5806	5605	5725	AVG		5664		3.90770	25.00000	O
Benzene	7362	7283	7260	7497	7532	7222	AVG		7359		1.75767	25.00000	O
Toluene	7024	7140	7217	7483	7530	7207	AVG		7267		2.73353	25.00000	O
n-Nonane	5496	4636	4837	4954	5020	5802	AVG		5124		8.54471	25.00000	O
n-Decane	5798	3849	3957	4393	5235	6041	AVG		4879		19.3769(	25.00000	O
Ethylbenzene	6297	6416	6763	7199	7274	7025	AVG		6829		5.97331	25.00000	O
m+p-Xylene	6720	6872	7209	7420	7442	7139	AVG		7134		4.07696	25.00000	O
o-Xylene	6572	6991	7296	7500	7534	7172	AVG		7177		5.00884	25.00000	O
1,2,4-trimethylbenzene	6208	6403	6617	7224	7361	7095	AVG		6818		6.94757	25.00000	O
n-Butylcyclohexane	5775	5501	5497	5138	5180	5954	AVG		5508		5.82780	25.00000	O
Naphthalene	2347	14959	37476	241667	511551	1543539	LNR	1.60411	5171		0.99988	0.99000	O
2,5-Dibromotoluene (FID)	+++++	2672	6616	72797	167070	559910	LNR	8.16972	1907		0.99902	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0709
Project : DEVNS-LTM AOC 43G Fall 2019 **Instrument ID:** GC02
Lab File IDs : 2MJ10063.D 2MJ10064.D 2MJ10065.D **Calibration Date(s):** 11-OCT-19 16:53
2MJ10062.D 2MJ10066.D 2MJ10067.D 11-OCT-19 20:26

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	5061	5308	5557	6266	6050	4706	AVG		5491		10.7798(	25.00000	M (
Methyl tert-butylether	3520	3367	3337	3496	3502	3198	AVG		3403		3.71088	25.00000	O
Benzene	6829	6814	6870	7370	7197	6169	AVG		6875		6.00394	25.00000	O
Toluene	5817	6185	6324	6817	6610	5351	AVG		6184		8.65391	25.00000	O
Ethylbenzene	4894	5083	5333	5919	5762	4635	AVG		5271		9.47534	25.00000	O
m+p-Xylene	6125	6373	6555	6946	6213	4486	AVG		6116		13.89838	25.00000	O
o-Xylene	5082	5437	5607	6039	5758	4686	AVG		5435		8.95291	25.00000	O
1,2,4-trimethylbenzene	5061	5308	5557	6266	6050	4706	AVG		5491		10.7798(	25.00000	O
Naphthalene	2647	16363	40911	287664	579639	+++++	LNR	1.37792	5878		0.99923	0.99000	O
2,5-Dibromotoluene (PID)	+++++	5682	15031	186074	385357	980863	LNR	-1.77028	3320		0.99426	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM AOC 43G Fall 2019 **SDG:** TM0709
Lab ID : WG264423-4 **Analytical Date:** 10/18/19 09:37
Lab File ID : 2MJ10159.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26 **Column ID:** A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
2	Methyl tert-butylether	3403	3153	3153	0.100	-7.35396	25.00000	Averaged	
3	Benzene	6875	6939	6939	0.100	0.92761	25.00000	Averaged	
4	Toluene	6184	6467	6467	0.100	4.56765	25.00000	Averaged	
5	Ethylbenzene	5271	5712	5712	0.100	8.35787	25.00000	Averaged	
6	m+p-Xylene	6116	6821	6821	0.100	11.51268	25.00000	Averaged	
7	o-Xylene	5435	5871	5871	0.100	8.02040	25.00000	Averaged	
8	1,2,4-trimethylbenzene	5491	6211	6211	0.100	13.10510	25.00000	Averaged	
10	Naphthalene	50.00000	56.08919	6432	0.100	12.17838	25.00000	Linear	
11	2,5-Dibromotoluene (PID)	50.00000	77.48696	5262	0.100	54.97393	25.00000	Linear	*

*** = Compound out of QC criteria**

600 Technology Way
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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM AOC 43G Fall 2019 **SDG:** TM0709
Lab ID : WG264423-4 **Analytical Date:** 10/18/19 09:37
Lab File ID : 2MJ10159.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26 **Column ID:** B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
5	n-Pentane	4700	4482	4482	0.100	-4.64799	25.00000	Averaged	
6	2-Methylpentane	5229	5350	5350	0.100	2.30886	25.00000	Averaged	
7	Methyl tert-butylether	4323	4291	4291	0.100	-0.75278	25.00000	Averaged	
8	2,2,4-Trimethylpentane	5664	6147	6147	0.100	8.51938	25.00000	Averaged	
9	Benzene	7359	7710	7710	0.100	4.77158	25.00000	Averaged	
11	Toluene	7267	7718	7718	0.100	6.20650	25.00000	Averaged	
12	n-Nonane	5124	5287	5287	0.100	3.17318	30.00000	Averaged	
13	n-Decane	4879	4672	4672	0.100	-4.24632	25.00000	Averaged	
14	Ethylbenzene	6829	7494	7494	0.100	9.73799	25.00000	Averaged	
15	m+p-Xylene	7134	7716	7716	0.100	8.17055	25.00000	Averaged	
16	o-Xylene	7177	7745	7745	0.100	7.91100	25.00000	Averaged	
18	1,2,4-trimethylbenzene	6818	7691	7691	0.100	12.80681	25.00000	Averaged	
19	n-Butylcyclohexane	5508	5539	5539	0.100	0.56869	25.00000	Averaged	
20	Naphthalene	50.00000	57.51809	5782	0.100	15.03619	25.00000	Linear	
21	2,5-Dibromotoluene (FID)	50.00000	67.96083	2281	0.100	35.92165	25.00000	Linear	*

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM AOC 43G Fall 2019 **SDG:** TM0709
Lab ID : WG264423-5 **Analytical Date:** 10/19/19 05:23
Lab File ID : 2MJ10181.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26 **Column ID:** A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
2	Methyl tert-butylether	3403	3446	3446	0.100	1.25936	25.00000	Averaged	
3	Benzene	6875	7273	7273	0.100	5.79005	25.00000	Averaged	
4	Toluene	6184	6738	6738	0.100	8.95890	25.00000	Averaged	
5	Ethylbenzene	5271	5874	5874	0.100	11.44801	25.00000	Averaged	
6	m+p-Xylene	6116	6868	6868	0.100	12.28831	25.00000	Averaged	
7	o-Xylene	5435	5975	5975	0.100	9.93839	25.00000	Averaged	
8	1,2,4-trimethylbenzene	5491	6179	6179	0.100	12.51582	25.00000	Averaged	
10	Naphthalene	50.00000	53.43935	6121	0.100	6.87869	25.00000	Linear	
11	2,5-Dibromotoluene (PID)	50.00000	64.65568	4410	0.100	29.31136	25.00000	Linear	*

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM AOC 43G Fall 2019 **SDG:** TM0709
Lab ID : WG264423-5 **Analytical Date:** 10/19/19 05:23
Lab File ID : 2MJ10181.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26 **Column ID:** B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4700	4356	4356	0.100	-7.32069	25.00000	Averaged
6	2-Methylpentane	5229	5192	5192	0.100	-0.70314	25.00000	Averaged
7	Methyl tert-butylether	4323	4424	4424	0.100	2.32588	25.00000	Averaged
8	2,2,4-Trimethylpentane	5664	5837	5837	0.100	3.03996	25.00000	Averaged
9	Benzene	7359	7756	7756	0.100	5.39855	25.00000	Averaged
11	Toluene	7267	7791	7791	0.100	7.20856	25.00000	Averaged
12	n-Nonane	5124	4702	4702	0.100	-8.23938	30.00000	Averaged
13	n-Decane	4879	4126	4126	0.100	-15.43065	25.00000	Averaged
14	Ethylbenzene	6829	7500	7500	0.100	9.82351	25.00000	Averaged
15	m+p-Xylene	7134	7742	7742	0.100	8.52900	25.00000	Averaged
16	o-Xylene	7177	7833	7833	0.100	9.13874	25.00000	Averaged
18	1,2,4-trimethylbenzene	6818	7545	7545	0.100	10.66922	25.00000	Averaged
19	n-Butylcyclohexane	5508	5090	5090	0.100	-7.57393	25.00000	Averaged
20	Naphthalene	50.00000	54.45281	5465	0.100	8.90563	25.00000	Linear
21	2,5-Dibromotoluene (FID)	50.00000	57.41713	1879	0.100	14.83426	25.00000	Linear

*** = Compound out of QC criteria**

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM AOC 43G Fall 2019
Lab ID : WG264714-8
Lab File ID : 2MJ10183.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0709
Analytical Date: 10/22/19 08:51
Instrument ID: GC02
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	3403	3428	3428	0.100	0.73689	25.00000	Averaged
3	Benzene	6875	7287	7287	0.100	6.00096	25.00000	Averaged
4	Toluene	6184	6750	6750	0.100	9.14906	25.00000	Averaged
5	Ethylbenzene	5271	5862	5862	0.100	11.21314	25.00000	Averaged
6	m+p-Xylene	6116	6944	6944	0.100	13.52581	25.00000	Averaged
7	o-Xylene	5435	5986	5986	0.100	10.13674	25.00000	Averaged
8	1,2,4-trimethylbenzene	5491	6215	6215	0.100	13.17248	25.00000	Averaged
10	Naphthalene	50.00000	51.33080	5873	0.100	2.66160	25.00000	Linear
11	2,5-Dibromotoluene (PID)	50.00000	52.29252	3589	0.100	4.58504	25.00000	Linear

*** = Compound out of QC criteria**

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM AOC 43G Fall 2019
Lab ID : WG264714-8
Lab File ID : 2MJ10183.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0709
Analytical Date: 10/22/19 08:51
Instrument ID: GC02
Column ID: B

	Compound	$\overline{RRF}$/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4700	4501	4501	0.100	-4.22843	25.00000	Averaged
6	2-Methylpentane	5229	5429	5429	0.100	3.83149	25.00000	Averaged
7	Methyl tert-butylether	4323	4384	4384	0.100	1.39650	25.00000	Averaged
8	2,2,4-Trimethylpentane	5664	6163	6163	0.100	8.79372	25.00000	Averaged
9	Benzene	7359	7775	7775	0.100	5.65538	25.00000	Averaged
11	Toluene	7267	7827	7827	0.100	7.70148	25.00000	Averaged
12	n-Nonane	5124	5375	5375	0.100	4.90263	30.00000	Averaged
13	n-Decane	4879	4767	4767	0.100	-2.29706	25.00000	Averaged
14	Ethylbenzene	6829	7516	7516	0.100	10.05488	25.00000	Averaged
15	m+p-Xylene	7134	7808	7808	0.100	9.45293	25.00000	Averaged
16	o-Xylene	7177	7852	7852	0.100	9.39955	25.00000	Averaged
18	1,2,4-trimethylbenzene	6818	7581	7581	0.100	11.19607	25.00000	Averaged
19	n-Butylcyclohexane	5508	5718	5718	0.100	3.82712	25.00000	Averaged
20	Naphthalene	50.00000	52.18431	5231	0.100	4.36863	25.00000	Linear
21	2,5-Dibromotoluene (FID)	50.00000	47.98799	1519	0.100	-4.02402	25.00000	Linear

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM AOC 43G Fall 2019 **SDG:** TM0709
Lab ID : WG264714-9 **Analytical Date:** 10/23/19 03:34
Lab File ID : 2MJ10204.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26 **Column ID:** A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
2	Methyl tert-butylether	3403	3273	3273	0.100	-3.81072	25.00000	Averaged	
3	Benzene	6875	7029	7029	0.100	2.23675	25.00000	Averaged	
4	Toluene	6184	6511	6511	0.100	5.27979	25.00000	Averaged	
5	Ethylbenzene	5271	5668	5668	0.100	7.53639	25.00000	Averaged	
6	m+p-Xylene	6116	6656	6656	0.100	8.81762	25.00000	Averaged	
7	o-Xylene	5435	5776	5776	0.100	6.26764	25.00000	Averaged	
8	1,2,4-trimethylbenzene	5491	5977	5977	0.100	8.84028	25.00000	Averaged	
10	Naphthalene	50.00000	52.23427	5979	0.100	4.46854	25.00000	Linear	
11	2,5-Dibromotoluene (PID)	50.00000	65.13796	4442	0.100	30.27593	25.00000	Linear	*

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM AOC 43G Fall 2019 **SDG:** TM0709
Lab ID : WG264714-9 **Analytical Date:** 10/23/19 03:34
Lab File ID : 2MJ10204.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26 **Column ID:** B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
5	n-Pentane	4700	4024	4024	0.100	-14.37795	25.00000	Averaged	
6	2-Methylpentane	5229	4808	4808	0.100	-8.05815	25.00000	Averaged	
7	Methyl tert-butylether	4323	4312	4312	0.100	-0.26565	25.00000	Averaged	
8	2,2,4-Trimethylpentane	5664	5480	5480	0.100	-3.26073	25.00000	Averaged	
9	Benzene	7359	7665	7665	0.100	4.16227	25.00000	Averaged	
11	Toluene	7267	7718	7718	0.100	6.20292	25.00000	Averaged	
12	n-Nonane	5124	4195	4195	0.100	-18.13208	30.00000	Averaged	
13	n-Decane	4879	3643	3643	0.100	-25.32122	25.00000	Averaged	*
14	Ethylbenzene	6829	7425	7425	0.100	8.72904	25.00000	Averaged	
15	m+p-Xylene	7134	7632	7632	0.100	6.99317	25.00000	Averaged	
16	o-Xylene	7177	7711	7711	0.100	7.43061	25.00000	Averaged	
18	1,2,4-trimethylbenzene	6818	7481	7481	0.100	9.72202	25.00000	Averaged	
19	n-Butylcyclohexane	5508	4647	4647	0.100	-15.61888	25.00000	Averaged	
20	Naphthalene	50.00000	54.36501	5456	0.100	8.73003	25.00000	Linear	
21	2,5-Dibromotoluene (FID)	50.00000	58.45462	1918	0.100	16.90924	25.00000	Linear	

*** = Compound out of QC criteria**

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Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
SDG : TM0709
Project : DEVNS-LTM AOC 43G Fall 2019
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG264520-4	10/11/19	16:53		31.284
Initial Calibration	WG264520-4	10/11/19	16:53	31.274	
Initial Calibration	WG264520-1	10/11/19	17:34		31.287
Initial Calibration	WG264520-1	10/11/19	17:34	31.271	
Initial Calibration	WG264520-2	10/11/19	18:17		31.299
Initial Calibration	WG264520-2	10/11/19	18:17	31.289	
Initial Calibration	WG264520-3	10/11/19	19:00		31.295
Initial Calibration	WG264520-3	10/11/19	19:00	31.285	
Initial Calibration	WG264520-5	10/11/19	19:43		31.296
Initial Calibration	WG264520-5	10/11/19	19:43	31.287	
Initial Calibration	WG264520-6	10/11/19	20:26		31.303
Initial Calibration	WG264520-6	10/11/19	20:26	31.293	
Independent Source	WG264520-7	10/11/19	21:10	31.29	31.299
Continuing Calibrati	WG264423-4	10/18/19	09:37	31.308	31.318
Method Blank Sample	WG264423-1	10/18/19	11:26	31.306	31.314
Laboratory Control S	WG264423-2	10/18/19	12:08	31.303	31.312
Laboratory Control S	WG264423-3	10/18/19	12:49	31.297	31.306
43G-EB-100919	TM0709-4	10/18/19	16:33	31.301	31.311
XGM-93-02X_FAL19	TM0709-1	10/18/19	17:14	31.301	31.31
XGM-97-12X_FAL19	TM0709-2	10/18/19	17:56	31.314	31.323
XGM-DUP1_FAL19	TM0709-3	10/18/19	18:39	31.311	31.318
Continuing Calibrati	WG264423-5	10/19/19	05:23	31.303	31.313
Continuing Calibrati	WG264714-8	10/22/19	08:51	31.282	31.292
Method Blank Sample	WG264714-1	10/22/19	10:31	31.282	31.29
Laboratory Control S	WG264714-2	10/22/19	11:13	31.283	31.292
Laboratory Control S	WG264714-3	10/22/19	11:55	31.281	31.29
XGM-97-12X_FAL19	TM0709-2DL	10/23/19	02:08	31.301	31.31
XGM-DUP1_FAL19	TM0709-3DL	10/23/19	02:51	31.301	31.308
Continuing Calibrati	WG264714-9	10/23/19	03:34	31.304	31.314

TM0709

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC43G-FAL19

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number,	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
4	2 x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6°C

Analytical Test Method: MADEPVP - VPH with targets

Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019 — 4

	Sample ID	Matrix	Date	Time	Samp Init.		Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
11	XGM-93-02X_FAL19	WG	10/9/19	0955	B/A	x	XGM-93-02X	N				
12	XGM-97-12X-FAL19	WG	10/9/19	1125	B/A	x	XGM-97-12X	N				
13	XGM-DUP1-FAL19	WG	10/9/19	1125	B/A	x	Field Dup	FD				
14	43G-EB-100919	WQ	10/9/19	1215	B/A	x	EB	EB				
15	~~TripBlank-100919~~	~~WG~~	~~10/9/19~~		~~B/A~~	x	Trip Blank	~~TB~~				
16												
17												
18												
		Turnaround Time:										

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
	10/9/19	1450		10/9/19	1450
	10/10/19	1700			

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

10.11.19 0945 0.8 °C

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC43G-FAL19

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

NOTE: Metals are TOTAL metals
Only one (1) sample bottle is needed for both SW6010/6020.

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2, Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C

	Sample ID	Matrix	Date	Time	Samp Init.	SW6010C - Fe Mn	SW6020A - As	A2320B - Alkalinity	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019					9		46						
11	XGM-93-02X-FALL	WG	10/1/19	0955	B/A	X	X	X	XGM-93-02X	N				
12	XGM-97-12X-FALL	WG	10/1/19	1120	B/A	X	X	X	XGM-97-12X	N				
13	XGM-DUP1-FALL	WG	10/1/19	1125	B/A	X	X	X	Field Duplicate	FD				
14	43G-EB-100119	WQ	10/1/19	1215	B/A	X	X	X	Equipment Blank	EB				
15														
16														
17														
18														
		Turnaround Time:												

Relinquished by: *(Signature)*	Date	Time
Britt Q	10/1/19	1450
	10/10/19	1700

Received by: *(Signature)*	Date	Time
	10/9/19	1457
B Banda 10-11-19		0910
2.9 / 1.1 / 0.3 (CF) 3.1 / 1.3 / 0.5°C		

Ship

Rec

680-175305-02 Chain of Custody

dition

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 680-584560.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jerry.lanier@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 680-175305-1
Address: 4955 Yarrow Street,	Due Date Requested: 10/23/2019			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Fort Devens Army Installation	Project #: 68016363			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	410.4/ COD	2540C_Calcd/ TDS	2320B/ Alkalinity	353.2_Pres	9060A/ (MOD) Waters - TOC Duplicates	Total Number of containers	Special Instructions/Note:
			Preservation Code:										
LFM-99-05A_FAL19 (680-175305-1)	10/8/19	09:45 Eastern		Water			X	X	X	X		3	
LFM-DUP01_FAL19 (680-175305-2)	10/8/19	09:50 Eastern		Water			X	X	X	X		3	
LFM-99-06ARP_FAL19 (680-175305-3)	10/8/19	12:00 Eastern		Water			X	X	X	X		3	
XGM-93-02X_FAL19 (680-175305-4)	10/9/19	09:55 Eastern		Water					X			1	
XGM-97-12X_FAL19 (680-175305-5)	10/9/19	11:20 Eastern		Water					X			1	
XGM-DUP1_FAL19 (680-175305-6)	10/9/19	11:25 Eastern		Water					X			1	
43G-EB-100919 (680-175305-7)	10/9/19	12:15 Eastern		Water					X			1	
G6M-04-10X-FAL19 (680-175305-13)	10/9/19	09:40 Eastern		Water							X	1	
G6M-07-02X_FAL19 (680-175305-14)	10/9/19	10:45 Eastern		Water					X	X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 10.11.19 1722	Company:	Received by: [signature]	Date/Time: 10/12/19 0900	Company: EAPEN
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 1.4, TR8, CFO, DVP, 10/12/19		

Ver: 01/16/2019

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 680-584560.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: jerry.lanier@testamericainc.com	State of Origin: Massachusetts	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 680-175305-1
Address: 4955 Yarrow Street,	Due Date Requested: 10/23/2019			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Fort Devens Army Installation	Project #: 68016363			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	410.4/ COD	2540C_Calcd/ TDS	2320B/ Alkalinity	353.2_Pres	9060A/ (MOD) Waters - TOC Duplicates	Total Number of containers	Special Instructions/Note:
			Preservation Code:										
AOC50_DUP1_FAL19 (680-175305-15)	10/9/19	10:50 Eastern		Water					X	X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	10.11.19 1722		[signature]	10/12/19 0900	EAVA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.9, IR6, CF0, PVR, 10/12/19

Ver: 01/16/2019

11/16/2019

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 680-584561.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jerry.lanier@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 680-175305-1
Address: 4955 Yarrow Street,	Due Date Requested: 10/23/2019			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Fort Devens Army Installation	Project #: 68016363			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	410.4/ COD	2540C_Calcd/ TDS	2320B/ Alkalinity	353.2_Pres	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
LFM-99-06ARP_FAL19 (680-175305-3)	10/8/19	12:00 Eastern		Water			X	X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		10.11.19 1728			10/12/19 0900	ETADV
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.9, 1.8, 2.0, PVP, 10/12/19

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175305-2

Login Number: 175305
List Number: 1
Creator: Banda, Christy S

List Source: Eurofins TestAmerica, Savannah

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

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175305-2

Login Number: 175305
List Number: 2
Creator: Petunin, Peter

List Source: Eurofins TestAmerica, Denver
List Creation: 10/12/19 03:22 PM

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175305-2
Project/Site: LTM/AOC 43G Fall 2019

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	SAVLAB	
Alabama	State	41450	06-30-20
Alaska	State	GA00006	06-30-20
Alaska (UST)	State	17-016	09-30-20
ANAB	Dept. of Defense ELAP	L2463	09-22-22
ANAB	ISO/IEC 17025	L2463.01	09-22-22
Arizona	State	AZ0808	12-14-19
Arkansas DEQ	State	19-015-0	02-01-20
California	State	2939	06-30-20
Colorado	State	GA00006	12-31-19
Connecticut	State	PH-0161	03-31-21
Florida	NELAP	E87052	06-30-20
GA Dept. of Agriculture	State Program	N/A	06-12-20
Georgia	State	E87052	06-30-20
Georgia (DW)	State	803	06-30-20
Guam	State	19-007R	04-17-20
Hawaii	State	<cert No.>	06-30-20
Indiana	State	C-GA-02	06-30-20
Iowa	State	353	09-22-20
Kansas	NELAP	E-10322	10-15-20
Kentucky (DW)	State	KY90084	12-31-19
Kentucky (UST)	State	<cert No.>	06-30-20
Kentucky (WW)	State	KY90084	12-31-19
Louisiana	NELAP	02011	06-30-20
Louisiana (DW)	State	LA009	12-31-19
Maine	State	GA00006	09-26-20
Maryland	State	250	12-31-19
Massachusetts	State	M-GA006	06-30-20
Michigan	State	9925	06-30-20
Mississippi	State	<cert No.>	06-30-20
Nebraska	State	NE-OS-7-04	06-30-20
New Hampshire	NELAP	2096	05-29-20
New Jersey	NELAP	GA769	06-30-20
New Mexico	State	GA00006	06-30-20
New York	NELAP	10842	04-01-20
North Carolina (DW)	State	13701	07-31-20
North Carolina (WW/SW)	State	269	12-31-19
Oklahoma	State	9984	08-31-20
Pennsylvania	NELAP	68-00474	06-30-20
Puerto Rico	State	GA00006	01-01-20
South Carolina	State	98001	06-30-20
Tennessee	State	02961	06-30-20
Texas	NELAP	T1047004185-19-3	11-30-19
Texas	TCEQ Water Supply	T104704185	09-23-20
US Fish & Wildlife	US Federal Programs	LE058448-0	07-31-20
Virginia	NELAP	10509	06-14-20
Washington	State	C805	06-10-20
West Virginia (DW)	State	9950C	12-31-19
West Virginia DEP	State	094	11-30-19
Wisconsin	State	999819810	08-31-20

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175305-2
Project/Site: LTM/AOC 43G Fall 2019

Laboratory: Eurofins TestAmerica, Savannah (Continued)

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

Authority	Program	Identification Number	Expiration Date
Wyoming	State	8TMS-L	06-30-20 *

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-175571-2
Client Project/Site: Fort Devens AOC 43G

For:
KOMAN Government Solutions, LLC
293 Boston Post Road West
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Jerry Lanier

Authorized for release by:
10/30/2019 6:21:41 PM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

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

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

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

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Job ID: 680-175571-2

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: Fort Devens AOC 43G

Report Number: 680-175571-2

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 the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 10/17/2019; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.5 C.

METALS (ICP)
Samples AAFES-7_FAL19 (680-175571-14), XGM-94-06X_FAL19 (680-175571-15), XGM-94-07X_FAL19 (680-175571-16) and XGM-94-08X_FAL19 (680-175571-17) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/17/2019 and analyzed on 10/24/2019.

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

METALS
Sample AAFES-7_FAL19 (680-175571-14) was analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 10/17/2019 and analyzed on 10/23/2019.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 43G

Job ID: 680-175571-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-175571-14	AAFES-7_FAL19	Water	10/14/19 14:09	10/17/19 12:15	
680-175571-15	XGM-94-06X_FAL19	Water	10/14/19 11:13	10/17/19 12:15	
680-175571-16	XGM-94-07X_FAL19	Water	10/14/19 11:13	10/17/19 12:15	
680-175571-17	XGM-94-08X_FAL19	Water	10/14/19 13:10	10/17/19 12:15	

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 43G

Job ID: 680-175571-2

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
3010A	Preparation, Total Metals	SW846	TAL SAV

Protocol References:

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

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Definitions/Glossary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 43G

Job ID: 680-175571-2

Qualifiers

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

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

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 43G

Job ID: 680-175571-2

Client Sample ID: AAFES-7_FAL19

Lab Sample ID: 680-175571-14

Date Collected: 10/14/19 14:09
Matrix: Water
Date Received: 10/17/19 12:15

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	110		50	50	17	ug/L		10/24/19 21:32	1
Manganese	86		10	3.0	1.0	ug/L		10/24/19 21:32	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/23/19 02:53	1

Client Sample ID: XGM-94-06X_FAL19

Lab Sample ID: 680-175571-15

Date Collected: 10/14/19 11:13
Matrix: Water
Date Received: 10/17/19 12:15

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	5500		50	50	17	ug/L		10/24/19 21:28	1
Manganese	1400		10	3.0	1.0	ug/L		10/24/19 21:28	1

Client Sample ID: XGM-94-07X_FAL19

Lab Sample ID: 680-175571-16

Date Collected: 10/14/19 11:13
Matrix: Water
Date Received: 10/17/19 12:15

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	8300		50	50	17	ug/L		10/24/19 21:37	1
Manganese	4200		10	3.0	1.0	ug/L		10/24/19 21:37	1

Client Sample ID: XGM-94-08X_FAL19

Lab Sample ID: 680-175571-17

Date Collected: 10/14/19 13:10
Matrix: Water
Date Received: 10/17/19 12:15

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	1000		50	50	17	ug/L		10/24/19 21:41	1
Manganese	3500		10	3.0	1.0	ug/L		10/24/19 21:41	1

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 43G

Job ID: 680-175571-2

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-591597/1-A
Matrix: Water
Analysis Batch: 592946

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 591597

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	50	U	50	50	17	ug/L		10/24/19 20:48	1
Manganese	3.0	U	10	3.0	1.0	ug/L		10/24/19 20:48	1

Lab Sample ID: LCS 680-591597/2-A
Matrix: Water
Analysis Batch: 592946

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 591597

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5010	5030		ug/L		100	87 - 115
Manganese	400	403		ug/L		101	90 - 114

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-591595/1-A
Matrix: Water
Analysis Batch: 592446

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 591595

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/23/19 02:23	1

Lab Sample ID: LCS 680-591595/2-A
Matrix: Water
Analysis Batch: 592446

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 591595

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	101		ug/L		101	84 - 116

QC Association Summary

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 43G

Job ID: 680-175571-2

Metals

Prep Batch: 591595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175571-14	AAFES-7_FAL19	Total/NA	Water	3010A	
MB 680-591595/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-591595/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 591597

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175571-14	AAFES-7_FAL19	Total/NA	Water	3010A	
680-175571-15	XGM-94-06X_FAL19	Total/NA	Water	3010A	
680-175571-16	XGM-94-07X_FAL19	Total/NA	Water	3010A	
680-175571-17	XGM-94-08X_FAL19	Total/NA	Water	3010A	
MB 680-591597/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-591597/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 592446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175571-14	AAFES-7_FAL19	Total/NA	Water	6020A	591595
MB 680-591595/1-A	Method Blank	Total/NA	Water	6020A	591595
LCS 680-591595/2-A	Lab Control Sample	Total/NA	Water	6020A	591595

Analysis Batch: 592946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175571-14	AAFES-7_FAL19	Total/NA	Water	6010C	591597
680-175571-15	XGM-94-06X_FAL19	Total/NA	Water	6010C	591597
680-175571-16	XGM-94-07X_FAL19	Total/NA	Water	6010C	591597
680-175571-17	XGM-94-08X_FAL19	Total/NA	Water	6010C	591597
MB 680-591597/1-A	Method Blank	Total/NA	Water	6010C	591597
LCS 680-591597/2-A	Lab Control Sample	Total/NA	Water	6010C	591597

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: Fort Devens AOC 43G

Job ID: 680-175571-2

Client Sample ID: AAFES-7_FAL19

Lab Sample ID: 680-175571-14

Date Collected: 10/14/19 14:09
Matrix: Water
Date Received: 10/17/19 12:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	591597	10/17/19 18:18	PG	TAL SAV
Total/NA	Analysis	6010C		1			592946	10/24/19 21:32	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	591595	10/17/19 18:14	PG	TAL SAV
Total/NA	Analysis	6020A		1			592446	10/23/19 02:53	BWR	TAL SAV
	Instrument ID: ICPMSC									

Client Sample ID: XGM-94-06X_FAL19

Lab Sample ID: 680-175571-15

Date Collected: 10/14/19 11:13
Matrix: Water
Date Received: 10/17/19 12:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	591597	10/17/19 18:18	PG	TAL SAV
Total/NA	Analysis	6010C		1			592946	10/24/19 21:28	BCB	TAL SAV
	Instrument ID: ICPE									

Client Sample ID: XGM-94-07X_FAL19

Lab Sample ID: 680-175571-16

Date Collected: 10/14/19 11:13
Matrix: Water
Date Received: 10/17/19 12:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	591597	10/17/19 18:18	PG	TAL SAV
Total/NA	Analysis	6010C		1			592946	10/24/19 21:37	BCB	TAL SAV
	Instrument ID: ICPE									

Client Sample ID: XGM-94-08X_FAL19

Lab Sample ID: 680-175571-17

Date Collected: 10/14/19 13:10
Matrix: Water
Date Received: 10/17/19 12:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	50 mL	591597	10/17/19 18:18	PG	TAL SAV
Total/NA	Analysis	6010C		1			592946	10/24/19 21:41	BCB	TAL SAV
	Instrument ID: ICPE									

Laboratory References:

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC43G-FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

NOTE: Metals are TOTAL metals
Only one (1) sample bottle is needed for both SW6010/6020.

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C

	Sample ID	Matrix	Date	Time	Samp Init.	SW6010C - Fe Mn	SW6020A - As	A2320B - Alkalinity	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
	Analytical Test Method					9		46						
	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019													
~~1~~	~~AAFES-2_FAL19~~	~~WG~~				X	X	X	~~AAFES-2~~	~~N1~~	~~16.20~~	~~33.30~~		~~1~~
2	AAFES-7_FAL19	WG	10/14/19	1409	ES	X	X		AAFES-7	N1	4.50	14.50		1
~~3~~	~~XGM-93-02X_FAL19~~	~~WG~~				X	X	X	~~XGM-93-02X~~	~~N1~~	~~28.00~~	~~38.00~~		~~1~~
~~4~~	~~XGM-94-04X_FAL19~~	~~WG~~				X	X	X	~~XGM-94-04X~~	~~N1~~	~~18.20~~	~~30.50~~		~~1~~
5	XGM-94-06X_FAL19	WG	10/14/19	1113	ES	X			XGM-94-06X	N1	17.00	27.00		1
~~6~~	~~XGM-94-07X_FAL19~~	~~WG~~				X			~~XGM-94-07X~~	~~N1~~	~~17.00~~	~~29.60~~		~~1~~
~~7~~	~~XGM-94-08X_FAL19~~	~~WG~~				X			~~XGM-94-08X~~	~~N1~~	~~23.50~~	~~36.10~~		~~1~~
~~8~~	~~XGM-97-12X_FAL19~~	~~WG~~				X	X	X	~~XGM-97-12X~~	~~N1~~	~~24.00~~	~~34.00~~		~~1~~
9														
10														
		Turnaround Time:												

Relinquished by: *(Signature)*	Date	Time
[signature]	10/16/19	1500
[signature]	10/16/19	17-

Received by: *(Signature)*	Date	Time
[signature]	10/16/19	17
2.4 (CF) 2.5°C		

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

[signature] 10/17/19 0905

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC43G-FAL19

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

NOTE: Metals are TOTAL metals
Only one (1) sample bottle is needed for both SW6010/6020.

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C

	Sample ID	Matrix	Date	Time	Samp Init.	SW6010C - Fe Mn	SW6020A - As	A2320B - Alkalinity	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019					9		46						
1	~~AAFES-2_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~AAFES-2~~	~~N1~~	~~16.20~~	~~33.30~~		1
2	~~AAFES-7_FAL19~~	~~WG~~				~~X~~	~~X~~		~~AAFES-7~~	~~N1~~	~~4.50~~	~~14.50~~		1
3	~~XGM-93-02X_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~XGM-93-02X~~	~~N1~~	~~28.00~~	~~38.00~~		1
4	~~XGM-94-04X_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~XGM-94-04X~~	~~N1~~	~~18.20~~	~~30.50~~		1
5	~~XGM-94-06X_FAL19~~	~~WG~~				~~X~~			~~XGM-94-06X~~	~~N1~~	~~17.00~~	~~27.00~~		1
6	XGM-94-07X_FAL19	WG	10/14/19	1113	ms	X			XGM-94-07X	N1	17.00	29.60		1
7	XGM-94-08X_FAL19	WG	10/14/19	1310	ms	X			XGM-94-08X	N1	23.50	36.10		1
8	~~XGM-97-12X_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~XGM-97-12X~~	~~N1~~	~~24.00~~	~~34.00~~		1
9														
10														
		Turnaround Time:												

Relinquished by: *(Signature)*	Date	Time
	10/14/19	1500
	10/16/19	1500
	10/16/19	17-

Received by: *(Signature)*	Date	Time
	10/14/19	1500
	10/16/19	15-
2.4(CF) 2.5 °C		

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

C Banda 10-17-19 0905

360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC50LTM 360325-Boston

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments:

NOTE: Metals samples are field filtered.
SW6010/6020 can be combined in 1-250ml HNO3 preserved poly bottles.
A trip blank sample must be submitted with the VOCs.

Equipment:

680-175571 Chain of Custody

Code	Matrix
WG	Ground Water

Code	Container/Preservative
5	1 x 125mL plastic, Cool < 6°C
7	2 x 250mL plastic, ZnAc/NaOH Cool < 6°C
8	3 x 40mL glass VOA Vials, HCl, pH < 2, Cool < 6°C
9	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
10	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
29	3 x 40mL glass VOA Vials, HCl, pH < 2, Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C
47	1 x 500mL, amber glass, H2SO4, Cool < 6°C

Event: KOMAN, Long Term Monitoring, AOC 50 Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	SW9056A - SO4	SW9034 - Sulfide	RSK175 - Dissolved Gases	SW6010C/FLDFLT - Fe Mn	SW6020A/FLDFLT - As	SW9060A - TOC	SW8260B - VOCs	A2320B - Alkalinity	E353.2 - Nitrite Nitrate as N	Location ID	Sample Type	Depth (~~ft bgs~~ TOC) Top	Bottom
						5	7	8	9	9	10	29	46	47				
1	G6M-18-01-FAL19	WG	10/14/19	1110	BrA	x	x	x	x	x	x	x	x	x	G6M-18-01	N1	116	126
2	G6M-02-13X-FAL19	WG	10/14/19	1400	BrA				x	x		x			G6M-02-13X	N1	109	115
3	G6M-03-10X-FAL19	WG	10/15/19	0935	BrA				x	x		x			G6M-03-10X	N1	122	137
4	AOC50-EB-101519	WG	10/15/19	1015	BrA				x	x		x			Equipment Blank	EB	-	-
5	XSA-12-97X-FAL19	WG	10/15/19	1210	BrA				x	x		x			XSA-12-97X	N1	122	132
6	G6M-02-11X-FAL19	WG	10/15/19	1330	BrA				x	x		x			G6M-02-11X	N1	124	134
7	G6M-02-01X-FAL19	WG	10/16/19	0940	BrA				x	x		x			G6M-02-01X	N1	79.44	94.44
8	AOC50-DUP03-FAL19	WG	10/16/19	0945	BrA				x	x		x			Field Duplicate	FD	79.44	94.44
9	G6M-04-01X-FAL19	WG	10/16/19	1210	BrA				x	x		x			G6M-04-01X	N1	81.46	91.46
10	G6M-04-03X-FAL19	WG	10/16/19	1335	BrA				x	x		x			G6M-04-03X	N1	84.48	94.48
		Turnaround Time: 21 Days																

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	10/16/19	1500	[signature]	10/16/19	15
[signature]	10/16/19	17	Julius Fuli	10-17-19	0915

Shipping Date / Carrier / Airbill Number

Received by Laboratory: (Signature, Date, Time) **& condition**

3.5°C+0 IR 8-JL 10-17-19

360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC50LTM

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments:

NOTE: Metals samples are field filtered.
SW6010/6020 can be combined in 1-250ml HNO3 preserved poly bottles.
A trip blank sample must be submitted with the VOCs.

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
5	1 x 125mL plastic, Cool < 6°C
7	2 x 250mL plastic, ZnAc/NaOH Cool < 6°C
8	3 x 40mL glass VOA Vials, HCl, pH < 2, Cool < 6°C
9	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
10	1 x 250mL, plastic, HNO3, pH < 2, Cool < 6°C
29	3 x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C
47	1 x 500mL, amber glass, H2SO4; Cool < 6°C

Event: KOMAN, Long Term Monitoring, AOC 50 Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	SW9056A - SO4 (5)	SW9034 - Sulfide (7)	RSK175 - Dissolved Gases (8)	SW6010C/FLDFLT - Fe Mn (9)	SW6020A/FLDFLT - As (9)	SW9060A - TOC (10)	SW8260B - VOCs (29)	A2320B - Alkalinity (46)	E353.2 - Nitrite Nitrate as N (47)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
1	GGM-02-08X_FALL9	WG	10/16/19	1222	ES	1	2	3	1	1	1	3	1	1	GGM-02-08X	N1	61.83	71.83
2	GGM-04-10A_FALL9	WG	10/16/19	1410	ES	1	2	3	1	1	1	3	1	1	GGM-04-10A	N1	31.80	41.80
3	TRIPBLANK-101619	Blank	10/16/19	—	ES							3			Trip Blank	TB		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	Date	Time
[signature]	10/16/19	1500
[signature]	10/16/19	12-

Received by: *(Signature)*	Date	Time
[signature]	10/16/19	15-

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* & condition

360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC43G-FAL19

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

NOTE: Metals are TOTAL metals
Only one (1) sample bottle is needed for both SW6010/6020.

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C

	Sample ID	Matrix	Date	Time	Samp Init.	SW6010C - Fe Mn	SW6020A - As	A2320B - Alkalinity	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
	Analytical Test Method					SW6010C - Fe Mn	SW6020A - As	A2320B - Alkalinity						
	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019					9		46						
1	~~AAFES-2_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~AAFES-2~~	~~N1~~	~~16.20~~	~~33.30~~		~~1~~
2	AAFES-7_FAL19	WG	10/14/19	1409	ES	X	X		AAFES-7	N1	4.50	14.50		1
3	~~XGM-93-02X_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~XGM-93-02X~~	~~N1~~	~~28.00~~	~~38.00~~		~~1~~
4	~~XGM-94-04X_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~XGM-94-04X~~	~~N1~~	~~18.20~~	~~30.50~~		~~1~~
5	XGM-94-06X_FAL19	WG	10/14/19	1113	ES	X			XGM-94-06X	N1	17.00	27.00		1
6	~~XGM-94-07X_FAL19~~	~~WG~~				~~X~~			~~XGM-94-07X~~	~~N1~~	~~17.00~~	~~29.00~~		~~1~~
7	~~XGM-94-08X_FAL19~~	~~WG~~				~~X~~			~~XGM-94-08X~~	~~N1~~	~~23.50~~	~~36.10~~		~~1~~
8	~~XGM-97-12X_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~XGM-97-12X~~	~~N1~~	~~24.00~~	~~34.00~~		~~1~~
9														
10														
		Turnaround Time:												

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
	10/16/19	1500		10/16/19	1500
	10/16/19	17			

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komanngs.com

360325-Boston

COC # AOC43G-FALL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

NOTE: Metals are TOTAL metals
Only one (1) sample bottle is needed for both SW6010/6020.

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
A	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
B	1 x 250mL, plastic, Cool < 6°C

	Event: KOMAN, Long Term Monitoring, AOC 43G Fall 2019					**Analytical Test Method**									
						SW6010C - Fe Mn	SW6020A - As	A2320B - Alkalinity			Sample	Depth (ft bgs)			
	Sample ID	Matrix	Date	Time	Samp Init.				Location ID		Type	Top	Bottom	Comments	Cooler
1	~~AAFES-2_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~AAFES-2~~		~~N1~~	~~16.20~~	~~33.30~~		1
2	~~AAFES-7_FAL19~~	~~WG~~				~~X~~	~~X~~		~~AAFES-7~~		~~N1~~	~~4.50~~	~~14.50~~		1
3	~~XGM-93-02X_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~XGM-93-02X~~		~~N1~~	~~28.00~~	~~38.00~~		1
4	~~XGM-94-04X_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~XGM-94-04X~~		~~N1~~	~~18.20~~	~~30.50~~		1
5	~~XGM-94-06X_FAL19~~	~~WG~~				~~X~~	~~X~~		~~XGM-94-06X~~		~~N1~~	~~17.00~~	~~27.00~~		1
6	XGM-94-07X_FAL19	WG	10/14/19	1113	MS	X	X		XGM-94-07X		N1	17.00	29.60		1
7	XGM-94-08X_FAL19	WG	10/14/19	1310	MS	X	X		XGM-94-08X		N1	23.50	36.10		1
8	~~XGM-97-12X_FAL19~~	~~WG~~				~~X~~	~~X~~	~~X~~	~~XGM-97-12X~~		~~N1~~	~~24.00~~	~~34.00~~		1
9															
10															
		Turnaround Time:													

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
	10/14/19	1500		10/14/19	1500
	10/16/19	1500		10/16/19	1500
	10/16/19	17-			

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* & condition

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175571-2

Login Number: 175571

List Source: Eurofins TestAmerica, Savannah

List Number: 1

Creator: Banda, Christy S

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175571-2
Project/Site: Fort Devens AOC 43G

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	SAVLAB	
Alabama	State	41450	06-30-20
Alaska	State	GA00006	06-30-20
Alaska (UST)	State	17-016	09-30-20
ANAB	Dept. of Defense ELAP	L2463	09-22-22
ANAB	DoD	L2463	09-22-22
ANAB	ISO/IEC 17025	L2463.01	09-22-22
ANAB	ISO/IEC 17025	L2463.01	09-22-22
Arizona	State	AZ0808	12-14-19
Arkansas DEQ	State	19-015-0	02-01-20
Arkansas DEQ	State Program	88-0692	02-01-20
California	State	2939	06-30-20
Colorado	State	GA00006	12-31-19
Connecticut	State	PH-0161	03-31-21
Florida	NELAP	E87052	06-30-20
GA Dept. of Agriculture	State Program	N/A	06-12-20
Georgia	State	E87052	06-30-20
Georgia	State Program	N/A	06-30-20
Georgia (DW)	State	803	06-30-20
Guam	State	19-007R	04-17-20
Hawaii	State	<cert No.>	06-30-20
Indiana	State	C-GA-02	06-30-20
Iowa	State	353	09-22-20
Kansas	NELAP	E-10322	10-15-20
Kentucky (DW)	State	KY90084	12-31-19
Kentucky (UST)	State	<cert No.>	06-30-20
Kentucky (UST)	State Program	18	06-30-20
Kentucky (WW)	State	KY90084	12-31-19
Kentucky (WW)	State Program	90084	12-31-19
Louisiana	NELAP	02011	06-30-20
Louisiana (DW)	State	LA009	12-31-19
Maine	State	GA00006	09-26-20
Maryland	State	250	12-31-19
Massachusetts	State	M-GA006	06-30-20
Massachusetts	State Program	M-GA006	06-30-20
Michigan	State	9925	06-30-20
Mississippi	State	<cert No.>	06-30-20
Mississippi	State Program	N/A	06-30-20
Nebraska	State	NE-OS-7-04	06-30-20
Nebraska	State Program	TestAmerica-Savannah	06-30-20
New Hampshire	NELAP	2096	05-29-20
New Hampshire	NELAP	2096	05-29-20
New Jersey	NELAP	GA769	06-30-20
New Mexico	State	GA00006	06-30-20
New York	NELAP	10842	04-01-20
North Carolina (DW)	State	13701	07-31-20
North Carolina (DW)	State Program	13701	07-31-20
North Carolina (WW/SW)	State	269	12-31-19
North Carolina (WW/SW)	State Program	269	12-31-19
Oklahoma	State	9984	08-31-20

Client: KOMAN Government Solutions, LLC
Job ID: 680-175571-2
Project/Site: Fort Devens AOC 43G

Laboratory: Eurofins TestAmerica, Savannah (Continued)

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

Authority	Program	Identification Number	Expiration Date
Pennsylvania	NELAP	68-00474	06-30-20
Puerto Rico	State	GA00006	01-01-20
South Carolina	State	98001	06-30-20
Tennessee	State	02961	06-30-20
Texas	NELAP	T104704185-19-13	11-30-19
Texas	NELAP	T1047004185-19-3	11-30-19
Texas	TCEQ Water Supply	T104704185	09-23-20
US Fish & Wildlife	US Federal Programs	LE058448-0	07-31-20
Virginia	NELAP	10509	06-14-20
Washington	State	C805	06-10-20
West Virginia (DW)	State	9950C	12-31-19
West Virginia (DW)	State Program	9950C	12-31-19
West Virginia DEP	State	094	11-30-19
Wisconsin	State	999819810	08-31-20
Wyoming	State	8TMS-L	06-30-20 *
Wyoming	State Program	8TMS-L	06-30-16 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-175052-2
Client Project/Site: LTM / AOC 69W Fall 2019

For:
KOMAN Government Solutions, LLC
293 Boston Post Road West
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Authorized for release by:
10/31/2019 5:54:07 PM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

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

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

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

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Job ID: 680-175052-2

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: LTM / AOC 69W Fall 2019

Report Number: 680-175052-2

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 the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 10/5/2019 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 0.7º C, 1.1º C, 1.4º C, 1.9º C and 3.6º C.

METALS (ICP) - DISSOLVED

Samples 69W-94-13_FAL19 (680-175052-2), ZWM-99-24X_FAL19 (680-175052-3), ZWM-95-18X_FAL19 (680-175052-6), ZWM-01-25X_FAL19 (680-175052-7), ZWM-99-22X_FAL19 (680-175052-8), 69W-DUP1_FAL19 (680-175052-9), 69WP-08-01_FAL19 (680-175052-10), 69WP-13-01_FAL19 (680-175052-11), ZWM-95-15X_FAL19 (680-175052-12), 69W-94-14_FAL19 (680-175052-13) and ZWM-99-23X_FAL19 (680-175052-14) were analyzed for Metals (ICP) - Dissolved in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/06/2019 and analyzed on 10/07/2019.

Manganese failed the recovery criteria high for the MS of sample ZWM-95-15X_FAL19MS (680-175052-12) in batch 680-589935.

Manganese failed the recovery criteria low for the MSD of sample ZWM-95-15X_FAL19MSD (680-175052-12) in batch 680-589935.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Refer to the QC report for details.

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

METALS (ICPMS) - DISSOLVED

Samples 69W-94-13_FAL19 (680-175052-2), ZWM-99-24X_FAL19 (680-175052-3), ZWM-95-18X_FAL19 (680-175052-6), ZWM-01-25X_FAL19 (680-175052-7), ZWM-99-22X_FAL19 (680-175052-8), 69W-DUP1_FAL19 (680-175052-9), 69WP-08-01_FAL19 (680-175052-10), ZWM-95-15X_FAL19 (680-175052-12), 69W-94-14_FAL19 (680-175052-13) and ZWM-99-23X_FAL19 (680-175052-14) were analyzed for Metals (ICPMS) - Dissolved in accordance with EPA SW-846 Method 6020A. The samples were prepared on 10/06/2019 and analyzed on 10/09/2019 and 10/16/2019.

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

Subcontract Work

Method MA EPH: This method was subcontracted to Katahdin Analytical Services Inc. The subcontract laboratory certification is different from that of the facility issuing the final report.

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / AOC 69W Fall 2019

Job ID: 680-175052-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-175052-2	69W-94-13_FAL19	WG	10/03/19 12:05	10/05/19 09:25	
680-175052-3	ZWM-99-24X_FAL19	WG	10/03/19 14:25	10/05/19 09:25	
680-175052-6	ZWM-95-18X_FAL19	WG	10/02/19 12:50	10/05/19 09:25	
680-175052-7	ZWM-01-25X_FAL19	WG	10/02/19 14:00	10/05/19 09:25	
680-175052-8	ZWM-99-22X_FAL19	WG	10/03/19 07:30	10/05/19 09:25	
680-175052-9	69W-DUP1_FAL19	WG	10/03/19 07:35	10/05/19 09:25	
680-175052-10	69WP-08-01_FAL19	WG	10/03/19 10:25	10/05/19 09:25	
680-175052-11	69WP-13-01_FAL19	WG	10/03/19 12:55	10/05/19 09:25	
680-175052-12	ZWM-95-15X_FAL19	WG	10/04/19 11:40	10/05/19 09:25	
680-175052-13	69W-94-14_FAL19	WG	10/04/19 13:05	10/05/19 09:25	
680-175052-14	ZWM-99-23X_FAL19	WG	10/03/19 10:00	10/05/19 09:25	

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / AOC 69W Fall 2019

Job ID: 680-175052-2

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
MA-EPH	MADEP EPH (Extractable Petroleum Hydroca	MA DEP	
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL SAV

Protocol References:

MA DEP = Massachusetts Department Of Environmental Protection

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

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Definitions/Glossary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / AOC 69W Fall 2019

Job ID: 680-175052-2

Qualifiers

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U	Undetected at the Limit of Detection.

Glossary

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

Client Sample ID: 69W-94-13_FAL19

Lab Sample ID: 680-175052-2
Date Collected: 10/03/19 12:05
Matrix: WG
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	7400		50	50	17	ug/L		10/07/19 17:14	1
Manganese	1600		10	3.0	1.0	ug/L		10/07/19 17:14	1

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	70		3.0	3.0	1.5	ug/L		10/09/19 19:12	1

Client Sample ID: ZWM-99-24X_FAL19

Lab Sample ID: 680-175052-3
Date Collected: 10/03/19 14:25
Matrix: WG
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	390		50	50	17	ug/L		10/07/19 17:59	1
Manganese	67		10	3.0	1.0	ug/L		10/07/19 17:59	1

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	1.9	J	3.0	3.0	1.5	ug/L		10/09/19 19:44	1

Client Sample ID: ZWM-95-18X_FAL19

Lab Sample ID: 680-175052-6
Date Collected: 10/02/19 12:50
Matrix: WG
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	1400		50	50	17	ug/L		10/07/19 19:14	1
Manganese	66		10	3.0	1.0	ug/L		10/07/19 19:14	1

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/16/19 14:34	1

Client Sample ID: ZWM-01-25X_FAL19

Lab Sample ID: 680-175052-7
Date Collected: 10/02/19 14:00
Matrix: WG
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	230		50	50	17	ug/L		10/07/19 18:27	1
Manganese	6200		10	3.0	1.0	ug/L		10/07/19 18:27	1

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/09/19 20:18	1

Client Sample ID: ZWM-99-22X_FAL19

Lab Sample ID: 680-175052-8
Matrix: WG
Date Collected: 10/03/19 07:30
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	10000		50	50	17	ug/L		10/07/19 18:18	1
Manganese	1100		10	3.0	1.0	ug/L		10/07/19 18:18	1

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	150		3.0	3.0	1.5	ug/L		10/09/19 20:03	1

Client Sample ID: 69W-DUP1_FAL19

Lab Sample ID: 680-175052-9
Matrix: WG
Date Collected: 10/03/19 07:35
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	9800		50	50	17	ug/L		10/07/19 18:13	1
Manganese	1100		10	3.0	1.0	ug/L		10/07/19 18:13	1

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	140		3.0	3.0	1.5	ug/L		10/09/19 19:59	1

Client Sample ID: 69WP-08-01_FAL19

Lab Sample ID: 680-175052-10
Matrix: WG
Date Collected: 10/03/19 10:25
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	7600		50	50	17	ug/L		10/07/19 17:28	1
Manganese	1300		10	3.0	1.0	ug/L		10/07/19 17:28	1

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/09/19 19:37	1

Client Sample ID: 69WP-13-01_FAL19

Lab Sample ID: 680-175052-11
Matrix: WG
Date Collected: 10/03/19 12:55
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Manganese	88		10	3.0	1.0	ug/L		10/07/19 17:23	1

Client Sample ID: ZWM-95-15X_FAL19

Lab Sample ID: 680-175052-12
Matrix: WG
Date Collected: 10/04/19 11:40
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	2300		50	50	17	ug/L		10/07/19 18:41	1
Manganese	690	J1	10	3.0	1.0	ug/L		10/07/19 18:41	1

Client Sample ID: ZWM-95-15X_FAL19

Lab Sample ID: 680-175052-12
Date Collected: 10/04/19 11:40
Matrix: WG
Date Received: 10/05/19 09:25

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**17**	**J1**	3.0	3.0	1.5	ug/L		10/16/19 14:18	1

Client Sample ID: 69W-94-14_FAL19

Lab Sample ID: 680-175052-13
Date Collected: 10/04/19 13:05
Matrix: WG
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	50	U	50	50	17	ug/L		10/07/19 18:08	1
Manganese	**1200**		10	3.0	1.0	ug/L		10/07/19 18:08	1

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/09/19 19:55	1

Client Sample ID: ZWM-99-23X_FAL19

Lab Sample ID: 680-175052-14
Date Collected: 10/03/19 10:00
Matrix: WG
Date Received: 10/05/19 09:25

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	**3500**		50	50	17	ug/L		10/07/19 18:22	1
Manganese	**770**		10	3.0	1.0	ug/L		10/07/19 18:22	1

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

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	**24**		3.0	3.0	1.5	ug/L		10/09/19 20:14	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-589545/1-A
Matrix: Water
Analysis Batch: 589935

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 589545

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	50	U	50	50	17	ug/L		10/07/19 16:32	1
Manganese	3.0	U	10	3.0	1.0	ug/L		10/07/19 16:32	1

Lab Sample ID: LCS 680-589545/2-A
Matrix: Water
Analysis Batch: 589935

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 589545

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5010	5310		ug/L		106	87 - 115
Manganese	400	426		ug/L		107	90 - 114

Lab Sample ID: MB 680-589547/1-A
Matrix: Water
Analysis Batch: 589935

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 589547

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Iron	50	U	50	50	17	ug/L		10/07/19 18:32	1
Manganese	3.0	U	10	3.0	1.0	ug/L		10/07/19 18:32	1

Lab Sample ID: LCS 680-589547/2-A
Matrix: Water
Analysis Batch: 589935

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 589547

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5010	5390		ug/L		108	87 - 115
Manganese	400	433		ug/L		108	90 - 114

Lab Sample ID: 680-175052-12 MS
Matrix: WG
Analysis Batch: 589935

Client Sample ID: ZWM-95-15X_FAL19
Prep Type: Dissolved
Prep Batch: 589547

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	2300		5010	7250		ug/L		99	87 - 115
Manganese	690	J1	400	1230	J1	ug/L		133	90 - 114

Lab Sample ID: 680-175052-12 MSD
Matrix: WG
Analysis Batch: 589935

Client Sample ID: ZWM-95-15X_FAL19
Prep Type: Dissolved
Prep Batch: 589547

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	2300		5010	7370		ug/L		101	87 - 115	2	20
Manganese	690	J1	400	1010	J1	ug/L		80	90 - 114	19	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-589541/1-A
Matrix: Water
Analysis Batch: 590266

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 589541

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/09/19 18:46	1

Lab Sample ID: LCS 680-589541/2-A
Matrix: Water
Analysis Batch: 590266

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 589541

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	112		ug/L		112	84 - 116

Lab Sample ID: MB 680-589546/1-A
Matrix: Water
Analysis Batch: 591455

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 589546

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/16/19 14:12	1

Lab Sample ID: LCS 680-589546/2-A
Matrix: Water
Analysis Batch: 591455

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 589546

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	115		ug/L		115	84 - 116

Lab Sample ID: 680-175052-12 MS
Matrix: WG
Analysis Batch: 591455

Client Sample ID: ZWM-95-15X_FAL19
Prep Type: Dissolved
Prep Batch: 589546

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	17	J1	100	121		ug/L		104	84 - 116

Lab Sample ID: 680-175052-12 MSD
Matrix: WG
Analysis Batch: 591455

Client Sample ID: ZWM-95-15X_FAL19
Prep Type: Dissolved
Prep Batch: 589546

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	17	J1	100	123		ug/L		106	84 - 116	1	20

Metals

Prep Batch: 589541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-2	69W-94-13_FAL19	Dissolved	WG	3005A	
680-175052-3	ZWM-99-24X_FAL19	Dissolved	WG	3005A	
680-175052-7	ZWM-01-25X_FAL19	Dissolved	WG	3005A	
680-175052-8	ZWM-99-22X_FAL19	Dissolved	WG	3005A	
680-175052-9	69W-DUP1_FAL19	Dissolved	WG	3005A	
680-175052-10	69WP-08-01_FAL19	Dissolved	WG	3005A	
680-175052-13	69W-94-14_FAL19	Dissolved	WG	3005A	
680-175052-14	ZWM-99-23X_FAL19	Dissolved	WG	3005A	
MB 680-589541/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-589541/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 589545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-2	69W-94-13_FAL19	Dissolved	WG	3005A	
680-175052-3	ZWM-99-24X_FAL19	Dissolved	WG	3005A	
680-175052-7	ZWM-01-25X_FAL19	Dissolved	WG	3005A	
680-175052-8	ZWM-99-22X_FAL19	Dissolved	WG	3005A	
680-175052-9	69W-DUP1_FAL19	Dissolved	WG	3005A	
680-175052-10	69WP-08-01_FAL19	Dissolved	WG	3005A	
680-175052-11	69WP-13-01_FAL19	Dissolved	WG	3005A	
680-175052-13	69W-94-14_FAL19	Dissolved	WG	3005A	
680-175052-14	ZWM-99-23X_FAL19	Dissolved	WG	3005A	
MB 680-589545/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-589545/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Prep Batch: 589546

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-6	ZWM-95-18X_FAL19	Dissolved	WG	3005A	
680-175052-12	ZWM-95-15X_FAL19	Dissolved	WG	3005A	
MB 680-589546/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-589546/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-175052-12 MS	ZWM-95-15X_FAL19	Dissolved	WG	3005A	
680-175052-12 MSD	ZWM-95-15X_FAL19	Dissolved	WG	3005A	

Prep Batch: 589547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-6	ZWM-95-18X_FAL19	Dissolved	WG	3005A	
680-175052-12	ZWM-95-15X_FAL19	Dissolved	WG	3005A	
MB 680-589547/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-589547/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-175052-12 MS	ZWM-95-15X_FAL19	Dissolved	WG	3005A	
680-175052-12 MSD	ZWM-95-15X_FAL19	Dissolved	WG	3005A	

Analysis Batch: 589935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-2	69W-94-13_FAL19	Dissolved	WG	6010C	589545
680-175052-3	ZWM-99-24X_FAL19	Dissolved	WG	6010C	589545
680-175052-6	ZWM-95-18X_FAL19	Dissolved	WG	6010C	589547
680-175052-7	ZWM-01-25X_FAL19	Dissolved	WG	6010C	589545
680-175052-8	ZWM-99-22X_FAL19	Dissolved	WG	6010C	589545
680-175052-9	69W-DUP1_FAL19	Dissolved	WG	6010C	589545

Metals (Continued)

Analysis Batch: 589935 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-10	69WP-08-01_FAL19	Dissolved	WG	6010C	589545
680-175052-11	69WP-13-01_FAL19	Dissolved	WG	6010C	589545
680-175052-12	ZWM-95-15X_FAL19	Dissolved	WG	6010C	589547
680-175052-13	69W-94-14_FAL19	Dissolved	WG	6010C	589545
680-175052-14	ZWM-99-23X_FAL19	Dissolved	WG	6010C	589545
MB 680-589545/1-A	Method Blank	Total Recoverable	Water	6010C	589545
MB 680-589547/1-A	Method Blank	Total Recoverable	Water	6010C	589547
LCS 680-589545/2-A	Lab Control Sample	Total Recoverable	Water	6010C	589545
LCS 680-589547/2-A	Lab Control Sample	Total Recoverable	Water	6010C	589547
680-175052-12 MS	ZWM-95-15X_FAL19	Dissolved	WG	6010C	589547
680-175052-12 MSD	ZWM-95-15X_FAL19	Dissolved	WG	6010C	589547

Analysis Batch: 590266

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-2	69W-94-13_FAL19	Dissolved	WG	6020A	589541
680-175052-3	ZWM-99-24X_FAL19	Dissolved	WG	6020A	589541
680-175052-7	ZWM-01-25X_FAL19	Dissolved	WG	6020A	589541
680-175052-8	ZWM-99-22X_FAL19	Dissolved	WG	6020A	589541
680-175052-9	69W-DUP1_FAL19	Dissolved	WG	6020A	589541
680-175052-10	69WP-08-01_FAL19	Dissolved	WG	6020A	589541
680-175052-13	69W-94-14_FAL19	Dissolved	WG	6020A	589541
680-175052-14	ZWM-99-23X_FAL19	Dissolved	WG	6020A	589541
MB 680-589541/1-A	Method Blank	Total Recoverable	Water	6020A	589541
LCS 680-589541/2-A	Lab Control Sample	Total Recoverable	Water	6020A	589541

Analysis Batch: 591455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-6	ZWM-95-18X_FAL19	Dissolved	WG	6020A	589546
680-175052-12	ZWM-95-15X_FAL19	Dissolved	WG	6020A	589546
MB 680-589546/1-A	Method Blank	Total Recoverable	Water	6020A	589546
LCS 680-589546/2-A	Lab Control Sample	Total Recoverable	Water	6020A	589546
680-175052-12 MS	ZWM-95-15X_FAL19	Dissolved	WG	6020A	589546
680-175052-12 MSD	ZWM-95-15X_FAL19	Dissolved	WG	6020A	589546

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / AOC 69W Fall 2019

Job ID: 680-175052-2

Client Sample ID: 69W-94-13_FAL19

Lab Sample ID: 680-175052-2
Date Collected: 10/03/19 12:05
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	589545	10/06/19 15:11	PG	TAL SAV
Dissolved	Analysis	6010C		1			589935	10/07/19 17:14	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	589541	10/06/19 15:06	PG	TAL SAV
Dissolved	Analysis	6020A		1			590266	10/09/19 19:12	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: ZWM-99-24X_FAL19

Lab Sample ID: 680-175052-3
Date Collected: 10/03/19 14:25
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	589545	10/06/19 15:11	PG	TAL SAV
Dissolved	Analysis	6010C		1			589935	10/07/19 17:59	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	589541	10/06/19 15:06	PG	TAL SAV
Dissolved	Analysis	6020A		1			590266	10/09/19 19:44	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: ZWM-95-18X_FAL19

Lab Sample ID: 680-175052-6
Date Collected: 10/02/19 12:50
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	589547	10/06/19 15:19	PG	TAL SAV
Dissolved	Analysis	6010C		1			589935	10/07/19 19:14	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	589546	10/06/19 15:12	PG	TAL SAV
Dissolved	Analysis	6020A		1			591455	10/16/19 14:34	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: ZWM-01-25X_FAL19

Lab Sample ID: 680-175052-7
Date Collected: 10/02/19 14:00
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	589545	10/06/19 15:11	PG	TAL SAV
Dissolved	Analysis	6010C		1			589935	10/07/19 18:27	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	589541	10/06/19 15:06	PG	TAL SAV
Dissolved	Analysis	6020A		1			590266	10/09/19 20:18	BJB	TAL SAV
	Instrument ID: ICPMSD									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / AOC 69W Fall 2019

Job ID: 680-175052-2

Client Sample ID: ZWM-99-22X_FAL19

Lab Sample ID: 680-175052-8
Date Collected: 10/03/19 07:30
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	589545	10/06/19 15:11	PG	TAL SAV
Dissolved	Analysis	6010C		1			589935	10/07/19 18:18	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	589541	10/06/19 15:06	PG	TAL SAV
Dissolved	Analysis	6020A		1			590266	10/09/19 20:03	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 69W-DUP1_FAL19

Lab Sample ID: 680-175052-9
Date Collected: 10/03/19 07:35
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	589545	10/06/19 15:11	PG	TAL SAV
Dissolved	Analysis	6010C		1			589935	10/07/19 18:13	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	589541	10/06/19 15:06	PG	TAL SAV
Dissolved	Analysis	6020A		1			590266	10/09/19 19:59	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 69WP-08-01_FAL19

Lab Sample ID: 680-175052-10
Date Collected: 10/03/19 10:25
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	589545	10/06/19 15:11	PG	TAL SAV
Dissolved	Analysis	6010C		1			589935	10/07/19 17:28	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	589541	10/06/19 15:06	PG	TAL SAV
Dissolved	Analysis	6020A		1			590266	10/09/19 19:37	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 69WP-13-01_FAL19

Lab Sample ID: 680-175052-11
Date Collected: 10/03/19 12:55
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	589545	10/06/19 15:11	PG	TAL SAV
Dissolved	Analysis	6010C		1			589935	10/07/19 17:23	BCB	TAL SAV
	Instrument ID: ICPE									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / AOC 69W Fall 2019

Job ID: 680-175052-2

Client Sample ID: ZWM-95-15X_FAL19

Lab Sample ID: 680-175052-12
Date Collected: 10/04/19 11:40
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	589547	10/06/19 15:19	PG	TAL SAV
Dissolved	Analysis	6010C		1			589935	10/07/19 18:41	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	589546	10/06/19 15:12	PG	TAL SAV
Dissolved	Analysis	6020A		1			591455	10/16/19 14:18	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: 69W-94-14_FAL19

Lab Sample ID: 680-175052-13
Date Collected: 10/04/19 13:05
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	589545	10/06/19 15:11	PG	TAL SAV
Dissolved	Analysis	6010C		1			589935	10/07/19 18:08	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	589541	10/06/19 15:06	PG	TAL SAV
Dissolved	Analysis	6020A		1			590266	10/09/19 19:55	BJB	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: ZWM-99-23X_FAL19

Lab Sample ID: 680-175052-14
Date Collected: 10/03/19 10:00
Matrix: WG
Date Received: 10/05/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			50 mL	50 mL	589545	10/06/19 15:11	PG	TAL SAV
Dissolved	Analysis	6010C		1			589935	10/07/19 18:22	BCB	TAL SAV
	Instrument ID: ICPE									
Dissolved	Prep	3005A			50 mL	250 mL	589541	10/06/19 15:06	PG	TAL SAV
Dissolved	Analysis	6020A		1			590266	10/09/19 20:14	BJB	TAL SAV
	Instrument ID: ICPMSD									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: Fort Devens RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
TM0469-4, 5, 6, 7, 8, 9, 10, 11 & 12

Matrices: x Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B **X**	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No ~~NA~~ VAP ID-15 (Yes) No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	(Yes) No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: [signature] **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 10/30/2019

TEST AMERICA SAVANNAH
DEVNS-LTM
TM0469

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
DEVNS-LTM
TM0469

Sample Receipt

The following samples were received on October 05, 2019 and were logged in under Katahdin Analytical Services work order number TM0469 for a hardcopy due date of October 24, 2019.

KATAHDIN	TEST AMERICA SAVANNAH
Sample No.	Sample Identification
TM0469-4	69W-94-13_FAL19
TM0469-5	ZWM-99-24X_FAL19
TM0469-6	ZWM-99-23X_FAL19
TM0469-7	ZWM-95-18X_FAL19
TM0469-8	ZWM-01-25X_FAL19
TM0469-9	ZWM-99-22X_FAL19
TM0469-10	69W-DUP1_FAL19
TM0469-11	ZWM-95-15X_FAL19
TM0469-12	69W-94-14_FAL19

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order # TM0469 were analyzed in accordance with Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample TM0469-11 was used as the Matrix Spike (MS) and Matrix Spike Duplicate (MSD) as requested by the client.

MA-EPH Analysis

Samples TM0469-4, 4RE, 6, 8, 9, 9RE, 10, 11, and 12 were manually integrated for the target analytes naphthalene, 2-methylnaphthalene, acenaphthene, fluorene, the C11-C22 aromatic range, the C9-C18 and/or C19-C36 aliphatic ranges, the fractionation surrogates 2-fluorobiphenyl and/or 2-bromonaphthalene, and/or the extraction surrogates o-terphenyl and/or 5-alpha-androstane. The specific reasons for the manual integrations are indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

Samples TM0469-4, 8, and 9 had low recoveries of the extraction surrogate 5-alpha-androstane that were outside the method acceptance limits. The samples were re-extracted within hold time, reanalyzed and had similar deviations, indicating a likely matrix effect. The results for both extractions are reported.

All of the closing continuing calibration standards met the method allowance of four or less compounds that exhibited percent differences greater than 25% but less than 40%.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
10.30.19

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Test America	KAS PM: [illegible]	Sampled By: Client	
Project:	KIMS Entry By: SCB	Delivered By: Fed Ex	
KAS Work Order#: TM0469	KIMS Review By: [illegible]	Received By: G. Brewer	
SDG #:	Cooler: 1A of 5	Date/Time Rec.: 10/05/19 12:25	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?		✓			
3. Chain of Custody signed by client?				✓	
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 1.1 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?			X		2 of 6 VPH vials arrived broken for MSD sample XGH-94-04X
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on: 9/12/19					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Test America	KAS PM: HHM	Sampled By: Client	
Project:	KIMS Entry By: JCB	Delivered By: Fed Ex	
KAS Work Order#: TM0469	KIMS Review By: HHM	Received By: G. Brewer	
SDG #:	Cooler: 2B of 5	Date/Time Rec.: 10/05/19 12:25	

HHM 10-7-19

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.7 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?				✓	
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Test America	KAS PM: HMM	Sampled By: Client	
Project:	KIMS Entry By: JDB	Delivered By: Fed Ex	
KAS Work Order#: TM0469	KIMS Review By: HMM	Received By: G. Brewer	
SDG #:	Cooler: 3A of 5 XB	Date/Time Rec.: 10/05/19 12:25	

Form 10-T9

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1 Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?		✓			
3. Chain of Custody signed by client?				✓	
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 1.9 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11 Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

360325-Boston 360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

TM0489

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC69W-FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number,	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:
NI = native
WG = ground water
on ice

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2 x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6°C

	Analytical Test Method	MADEPEP - EPH with PAHs
Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019		2

	Sample ID	Matrix	Date	Time	Samp Init.		Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
11	69W-94-13_Fal19	WG	10/3/19	1205	MS	2	69W-94-13	NI	3.00	13.00		
12	ZWM-99-24X_Fal19	WG	10/03/19	1425	MS	2	ZWM-99-24X	NI	2.50	15.52		
13												
14												
15												
16												
17												
18												
		Turnaround Time: 21 Days										

Relinquished by: *(Signature)*	Date	Time
[signature]	10/4/19	1430
[signature]	10/4/19	1500
[signature]	10-4-19	1710
FedEx		

Received by: *(Signature)*	Date	Time
[signature]	10/4/19	1430
[signature]	[illegible]	[illegible]
FedEx		
[signature]	10/05/19	1025

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* & condition

Page 2 of 2

10/30/2019 0000008

360325-Boston 360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC69W-FAL19

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number,	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:

Equipment:

Analytical Test Method

MADEPEP - EPH with PAHs

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2 x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6°C

Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019

2

	Sample ID	Matrix	Date	Time	Samp Init.		Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	[illegible]	WG				X	[illegible]	N1	3.00	13.00		1
2	[illegible]	WG				X	[illegible]	N1	3.00	13.00		1
3	[illegible]	WG				X	ZWM-99-35X	N1	4.00	16.13		1
4	[illegible]	WG				X	ZWM-95-19X	N1	3.00	15.87		1
5	[illegible]	WG				X	ZWM-95-18X	N1	3.00	15.22		1
6	[illegible]	WG				X	ZWM-99-22X	N1	4.60	14.63		1
7	ZWM-99-23X_FAL19	WG	10/3/19	1000	MM	X	ZWM-99-23X	N1	3.00	14.68		1
8	[illegible]	WG				X	ZWM-99-24X	N1	2.50	15.52		1
9												
10												

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	**Date**	**Time**	**Received by: *(Signature)***	**Date**	**Time**
[signature]	10/4/19	1500	[signature]	10-4-19	15
[signature]	10/4/19	1500	FedEx		
FedEx			[signature]	100519	1225

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

360325-Boston 360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC69W-FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number,	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:
CV = Chris Vignola
N1 => Native sample
Samples cooled to 4°C

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2 x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6°C

Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: MADEPEP - EPH with PAHs	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
11	ZWM-95-18X_FAL19	WG	10/2/19	1250	CV	X	ZWM-95-18X	N1	3.00	13.00		1
12	ZWM-01-25X_FAL19	WG	10/2/19	1400	CV	X	ZWM-01-25X	N1	4.00	16.13		1
13	ZWM-99-22X_FAL19	WG	10/3/19	0730	CV	X	ZWM-99-22X	N1	4.63	14.63		1
14	69W-DUP1_FAL19	WG	10/3/19	0735	CV	X	ZWM-99-22X	DUP	4.63	14.63		1
15	ZWM-95-15X_FAL19	WG	10/4/19	1140	CV	X	ZWM-95-15X	N1	3.00	13.00	MS, MSD	1
16	69W-94-14_FAL19	WG	10/4/19	1305	CV	X	69W-94-14	N1	3.00	13.00		1
17												
18												
		Turnaround Time: 21 Days										

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
[signature]	10/4/19	1455	[signature]	10-4-19	1500
[signature]	10-2-19	[illegible]	FedEx		
FedEx			[signature]	100519	12:25

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

Page 2 of 2

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Oct. 31, 2019
12:15 PM

Login Number: TM0469

Account: TASAV001
Test America Savannah

Project: TASAV-DEVENS

NoWeb

Quote/Incoming:

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.1 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative. VPH undetect ethylbenzene, see work order SL3114.
CHECK NO.		
CLIENT PO#	:	PO# 3056393
CLIENT PROJECT MANAGE		
CONTRACT		
COOLER TEMPERATURE	:	1.1, 0.7, 1.9
DELIVERY SERVICES	:	FedEx
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS		JCB
PM	:	HHM
PROJECT NAME		DEVNS-LTM
QC LEVEL		IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF EDD and invoice to Jerry. No HC.

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0469-4	69W-94-13_FAL19	03-OCT-19 12:05	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	17-OCT-19	1L N-Amber Glass		

TM0469-5	ZWM-99-24X_FAL19	03-OCT-19 14:25	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	17-OCT-19	1L N-Amber Glass		

TM0469-6	ZWM-99-23X_FAL19	03-OCT-19 10:00	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	17-OCT-19	1L N-Amber Glass		

TM0469-7	ZWM-95-18X_FAL19	02-OCT-19 12:50	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	16-OCT-19	1L N-Amber Glass		

TM0469-8	ZWM-01-25X_FAL19	02-OCT-19 14:00	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	16-OCT-19	1L N-Amber Glass		

TM0469-9	ZWM-99-22X_FAL19	03-OCT-19 07:30	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	17-OCT-19	1L N-Amber Glass		

TM0469-10	69W-DUP1_FAL19	03-OCT-19 07:35	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	17-OCT-19	1L N-Amber Glass		

JVP 10/3/19

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Oct. 31, 2019
12:15 PM

Login Number: TM0469

Account: TASAV001
Test America Savannah

Project: TASAV-DEVENS

Quote/Incoming:
NoWeb

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0469-11	ZWM-95-15X_FAL19	04-OCT-19 11:40	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	18-OCT-19	1L N-Amber Glass		**MS/MSD**

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0469-12	69W-94-14_FAL19	04-OCT-19 13:05	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	18-OCT-19	1L N-Amber Glass		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0469-13	MS CHARGE	04-OCT-19 11:40	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	18-OCT-19	1L N-Amber Glass		**MS charge, not a sample**

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0469-14	MSD CHARGE	04-OCT-19 11:40	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	18-OCT-19	1L N-Amber Glass		**MSD charge, not a sample**

Total Samples: ***11*** ***Total Analyses:*** ***11***

JR
10/31/19

SAMPLE DATA SUMMARY PACKAGE

1
2
3
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14

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-4
Client ID: 69W-94-13_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2074.D

Sample Date: 03-OCT-19
Received Date: 05-OCT-19
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730

Analysis Date: 11-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 25-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	J	76	ug/L	1	100	98.	49.	74.
C19-C36 Aliphatics		100	ug/L	1	100	98.	49.	74.
C11-C22 Aromatics	J	77	ug/L	1	100	98.	49.	74.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.88	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.98	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Fluorene		2.4	ug/L	1	2	2.0	0.88	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane	*	32.9	%					
o-Terphenyl		59.4	%					
2-Fluorobiphenyl		77.0	%					
2-Bromonaphthalene		69.0	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-4RE
Client ID: 69W-94-13_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2161.D

Sample Date: 03-OCT-19
Received Date: 05-OCT-19
Extract Date: 13-OCT-19
Extracted By: AC
Extraction Method: SW846 3510C
Lab Prep Batch: WG263992

Analysis Date: 15-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 29-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	J	91	ug/L	1	100	99.	50.	74.
C19-C36 Aliphatics	U	99	ug/L	1	100	99.	50.	74.
C11-C22 Aromatics	J	52	ug/L	1	100	99.	50.	74.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.89	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.99	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Fluorene	J	1.9	ug/L	1	2	2.0	0.89	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane	*	13.4	%					
o-Terphenyl		45.6	%					
2-Fluorobiphenyl		75.9	%					
2-Bromonaphthalene		66.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-5
Client ID: ZWM-99-24X_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2075.D

Sample Date: 03-OCT-19
Received Date: 05-OCT-19
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730

Analysis Date: 11-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 25-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	97	ug/L	1	100	97.	48.	73.
C19-C36 Aliphatics	U	97	ug/L	1	100	97.	48.	73.
C11-C22 Aromatics	U	97	ug/L	1	100	97.	48.	73.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.87	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.78	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.87	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.78	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.4	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.4	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.78	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.97	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.87	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.78	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.87	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.4	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.1	1.4
5-Alpha Androstane		39.6	%					
o-Terphenyl		76.4	%					
2-Fluorobiphenyl		93.5	%					
2-Bromonaphthalene		91.0	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-6
Client ID: ZWM-99-23X_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2076.D

Sample Date: 03-OCT-19
Received Date: 05-OCT-19
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730

Analysis Date: 11-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 25-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	97	ug/L	1	100	97.	48.	73.
C19-C36 Aliphatics		120	ug/L	1	100	97.	48.	73.
C11-C22 Aromatics	U	97	ug/L	1	100	97.	48.	73.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.87	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.78	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.87	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.78	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.4	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.4	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.78	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.97	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.87	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.78	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.87	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.4	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.1	1.4
5-Alpha Androstane		45.1	%					
o-Terphenyl		86.8	%					
2-Fluorobiphenyl		98.4	%					
2-Bromonaphthalene		96.1	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-7RE
Client ID: ZWM-95-18X_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2162.D

Sample Date: 02-OCT-19
Received Date: 05-OCT-19
Extract Date: 13-OCT-19
Extracted By: AC
Extraction Method: SW846 3510C
Lab Prep Batch: WG263992

Analysis Date: 15-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 25-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	52.	77.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	52.	77.
C11-C22 Aromatics	U	100	ug/L	1	100	100	52.	77.
Naphthalene	U	2.1	ug/L	1	2	2.1	0.93	1.5
2-Methylnaphthalene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Phenanthrene	U	2.1	ug/L	1	2	2.1	0.93	1.5
Acenaphthylene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Acenaphthene	U	2.1	ug/L	1	2	2.1	1.8	2.0
Anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Benzo(a)anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Benzo(a)pyrene	U	2.1	ug/L	1	2	2.1	1.3	1.5
Benzo(b)fluoranthene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Benzo(g,h,i)perylene	U	2.1	ug/L	1	2	2.1	1.3	1.5
Benzo(k)fluoranthene	U	2.1	ug/L	1	2	2.1	1.0	1.5
Chrysene	U	2.1	ug/L	1	2	2.1	0.93	1.5
Dibenzo(a,h)anthracene	U	2.1	ug/L	1	2	2.1	1.2	1.5
Fluoranthene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Fluorene	U	2.1	ug/L	1	2	2.1	0.93	1.5
Indeno(1,2,3-cd)pyrene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Pyrene	U	2.1	ug/L	1	2	2.1	1.1	1.5
5-Alpha Androstane		48.3	%					
o-Terphenyl		80.5	%					
2-Fluorobiphenyl		91.2	%					
2-Bromonaphthalene		84.4	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-8
Client ID: ZWM-01-25X_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2078.D

Sample Date: 02-OCT-19
Received Date: 05-OCT-19
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730

Analysis Date: 11-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 25-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	51.	76.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	51.	76.
C11-C22 Aromatics	U	100	ug/L	1	100	100	51.	76.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.92	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.82	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.92	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.82	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.82	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.92	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.82	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.92	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane	*	15.0	%					
o-Terphenyl		46.0	%					
2-Fluorobiphenyl		53.6	%					
2-Bromonaphthalene		53.8	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-8RE
Client ID: ZWM-01-25X_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2163.D

Sample Date: 02-OCT-19
Received Date: 05-OCT-19
Extract Date: 13-OCT-19
Extracted By: AC
Extraction Method: SW846 3510C
Lab Prep Batch: WG263992

Analysis Date: 15-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 25-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	99	ug/L	1	100	99.	50.	74.
C19-C36 Aliphatics	U	99	ug/L	1	100	99.	50.	74.
C11-C22 Aromatics	U	99	ug/L	1	100	99.	50.	74.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.89	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.99	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane	*	17.7	%					
o-Terphenyl		61.7	%					
2-Fluorobiphenyl		61.7	%					
2-Bromonaphthalene		60.2	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-9
Client ID: ZWM-99-22X_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2079.D

Sample Date: 03-OCT-19
Received Date: 05-OCT-19
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730

Analysis Date: 11-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 31-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	J	65	ug/L	1	100	100	52.	77.
C19-C36 Aliphatics		130	ug/L	1	100	100	52.	77.
C11-C22 Aromatics		220	ug/L	1	100	100	52.	77.
Naphthalene		2.7	ug/L	1	2	2.1	0.93	1.5
2-Methylnaphthalene	J	1.2	ug/L	1	2	2.1	0.82	1.5
Phenanthrene	U	2.1	ug/L	1	2	2.1	0.93	1.5
Acenaphthylene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Acenaphthene	J	2.0	ug/L	1	2	2.1	1.8	2.0
Anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Benzo(a)anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Benzo(a)pyrene	U	2.1	ug/L	1	2	2.1	1.3	1.5
Benzo(b)fluoranthene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Benzo(g,h,i)perylene	U	2.1	ug/L	1	2	2.1	1.3	1.5
Benzo(k)fluoranthene	U	2.1	ug/L	1	2	2.1	1.0	1.5
Chrysene	U	2.1	ug/L	1	2	2.1	0.93	1.5
Dibenzo(a,h)anthracene	U	2.1	ug/L	1	2	2.1	1.2	1.5
Fluoranthene	U	2.1	ug/L	1	2	2.1	0.82	1.5
Fluorene		4.4	ug/L	1	2	2.1	0.93	1.5
Indeno(1,2,3-cd)pyrene	U	2.1	ug/L	1	2	2.1	1.4	1.5
Pyrene	U	2.1	ug/L	1	2	2.1	1.1	1.5
5-Alpha Androstane	*	34.7	%					
o-Terphenyl		64.4	%					
2-Fluorobiphenyl		78.4	%					
2-Bromonaphthalene		77.4	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-9RE
Client ID: ZWM-99-22X_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2164.D

Sample Date: 03-OCT-19
Received Date: 05-OCT-19
Extract Date: 13-OCT-19
Extracted By: AC
Extraction Method: SW846 3510C
Lab Prep Batch: WG263992

Analysis Date: 16-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 31-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics		170	ug/L	1	100	100	50.	76.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	76.
C11-C22 Aromatics		160	ug/L	1	100	100	50.	76.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.91	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.91	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Acenaphthene	J	1.8	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.91	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.81	1.5
Fluorene		3.8	ug/L	1	2	2.0	0.91	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane	*	26.3	%					
o-Terphenyl		66.9	%					
2-Fluorobiphenyl		70.2	%					
2-Bromonaphthalene		67.1	%					

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ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-10
Client ID: 69W-DUP1_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2080.D

Sample Date: 03-OCT-19
Received Date: 05-OCT-19
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730

Analysis Date: 11-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 25-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	99	ug/L	1	100	99.	50.	74.
C19-C36 Aliphatics		120	ug/L	1	100	99.	50.	74.
C11-C22 Aromatics		230	ug/L	1	100	99.	50.	74.
Naphthalene		3.6	ug/L	1	2	2.0	0.89	1.5
2-Methylnaphthalene	J	1.2	ug/L	1	2	2.0	0.79	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.99	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Fluorene		4.2	ug/L	1	2	2.0	0.89	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		41.9	%					
o-Terphenyl		67.7	%					
2-Fluorobiphenyl		73.7	%					
2-Bromonaphthalene		72.7	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-11
Client ID: ZWM-95-15X_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2081.D

Sample Date: 04-OCT-19
Received Date: 05-OCT-19
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730

Analysis Date: 11-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 25-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	99	ug/L	1	100	99.	50.	74.
C19-C36 Aliphatics	U	99	ug/L	1	100	99.	50.	74.
C11-C22 Aromatics	U	99	ug/L	1	100	99.	50.	74.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.89	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.99	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.79	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.89	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		47.0	%					
o-Terphenyl		71.5	%					
2-Fluorobiphenyl		72.4	%					
2-Bromonaphthalene		65.3	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0469-12
Client ID: 69W-94-14_FAL19
Project: DEVNS-LTM
SDG: TM0469
Lab File ID: CMJ2082.D

Sample Date: 04-OCT-19
Received Date: 05-OCT-19
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730

Analysis Date: 11-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 25-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	98	ug/L	1	100	98.	49.	74.
C19-C36 Aliphatics	U	98	ug/L	1	100	98.	49.	74.
C11-C22 Aromatics	U	98	ug/L	1	100	98.	49.	74.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.88	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.98	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		49.9	%					
o-Terphenyl		89.6	%					
2-Fluorobiphenyl		91.0	%					
2-Bromonaphthalene		88.5	%					

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Report of Analytical Results

Client:
Lab ID: WG263730-1
Client ID: Method Blank Sample
Project:
SDG: TM0469
Lab File ID: CMJ2067.D

Sample Date:
Received Date:
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730

Analysis Date: 11-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 24-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		40.4	%					
o-Terphenyl		91.6	%					
2-Fluorobiphenyl		75.2	%					
2-Bromonaphthalene		68.2	%					

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Report of Analytical Results

Client:
Lab ID: WG263992-1RA
Client ID: Method Blank Sample
Project:
SDG: TM0469
Lab File ID: CMJ2264.D

Sample Date:
Received Date:
Extract Date: 13-OCT-19
Extracted By: AC
Extraction Method: SW846 3510C
Lab Prep Batch: WG263992

Analysis Date: 22-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 24-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		52.2	%					
o-Terphenyl		66.6	%					
2-Fluorobiphenyl		55.3	%					
2-Bromonaphthalene		48.4	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** DEVNS-LTM **Matrix:** AQ
Lab Code: KAS **SDG:** TM0469

Client Sample ID	Lab Sample ID	Col. ID	2BN	#	2FBP	#	5AA	#	OTP	#
69W-DUP1_FAL19	TM0469-10	B	72.7		73.7		41.9		67.7	
ZWM-95-15X_FAL19	TM0469-11	B	65.3		72.4		47.0		71.5	
69W-94-14_FAL19	TM0469-12	B	88.5		91.0		49.9		89.6	
69W-94-13_FAL19	TM0469-4	B	69.0		77.0		32.9	*	59.4	
69W-94-13_FAL19	TM0469-4RE	B	66.6		75.9		13.4	*	45.6	
ZWM-99-24X_FAL19	TM0469-5	B	91.0		93.5		39.6		76.4	
ZWM-99-23X_FAL19	TM0469-6	B	96.1		98.4		45.1		86.8	
ZWM-95-18X_FAL19	TM0469-7RE	B	84.4		91.2		48.3		80.5	
ZWM-01-25X_FAL19	TM0469-8	B	53.8		53.6		15.0	*	46.0	
ZWM-01-25X_FAL19	TM0469-8RE	B	60.2		61.7		17.7	*	61.7	
ZWM-99-22X_FAL19	TM0469-9	B	77.4		78.4		34.7	*	64.4	
ZWM-99-22X_FAL19	TM0469-9RE	B	67.1		70.2		26.3	*	66.9	
Method Blank Sample	WG263730-1	B	68.2		75.2		40.4		91.6	
Laboratory Control S	WG263730-2RA	B	87.4		88.2		47.0		89.2	
Laboratory Control S	WG263730-3	B	87.2		88.0		54.2		94.2	
Matrix Spike	WG263730-4RA	B	82.2		82.8		43.6		68.7	
Matrix Spike Duplica	WG263730-5RA	B	84.8		85.5		44.1		74.4	
Method Blank Sample	WG263992-1RA	B	48.4		55.3		52.2		66.6	
Laboratory Control S	WG263992-2RA	B	57.9		58.4		49.8		58.3	
Laboratory Control S	WG263992-3RA	B	78.4		78.8		52.2		76.2	

		QC Limits
5AA	5-ALPHA ANDROSTANE	40-140
OTP	O-TERPHENYL	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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LCS/LCSD Recovery Report

LCS ID: WG263730-2RA
LCSD ID: WG263730-3
Project:
SDG: TM0469
Report Date: 24-OCT-19
LCS File ID: CMJ2189.D

Received Date:
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730
LCSD File ID: CMJ2069.d

Analysis Date: 16-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	1400	91.5	1570	103.	ug/L	11	25	40-140
C9-C18 Aliphatics	540.	336.	62.2	307.	56.8	ug/L	9	25	40-140
C19-C36 Aliphatics	720.	667.	92.6	544.	75.6	ug/L	20	25	40-140
Naphthalene	90.0	70.5	78.3	69.5	77.2	ug/L	1	25	40-140
2-Methylnaphthalene	90.0	73.7	81.9	74.1	82.3	ug/L	0	25	40-140
Phenanthrene	90.0	82.8	92.0	83.8	93.1	ug/L	1	25	40-140
Acenaphthylene	90.0	73.4	81.6	74.5	82.8	ug/L	1	25	40-140
Acenaphthene	90.0	76.1	84.6	76.3	84.8	ug/L	0	25	40-140
Anthracene	90.0	80.5	89.4	81.8	90.9	ug/L	2	25	40-140
Benzo(a)anthracene	90.0	83.0	92.2	83.6	92.9	ug/L	1	25	40-140
Benzo(a)pyrene	90.0	80.1	89.0	83.9	93.2	ug/L	5	25	40-140
Benzo(b)fluoranthene	90.0	90.7	101.	88.0	97.8	ug/L	3	25	40-140
Benzo(g,h,i)perylene	90.0	89.5	99.4	92.0	102.	ug/L	3	25	40-140
Benzo(k)fluoranthene	90.0	82.6	91.8	87.3	97.0	ug/L	6	25	40-140
Chrysene	90.0	86.4	96.0	87.4	97.1	ug/L	1	25	40-140
Dibenzo(a,h)anthracene	90.0	79.5	88.3	84.0	93.3	ug/L	6	25	40-140
Fluoranthene	90.0	85.7	95.2	86.2	95.8	ug/L	0	25	40-140
Fluorene	90.0	76.9	85.4	78.2	86.9	ug/L	2	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	83.5	92.8	86.2	95.8	ug/L	3	25	40-140
Pyrene	90.0	84.8	94.2	85.2	94.7	ug/L	0	25	40-140
5-Alpha Androstane			47.0		54.2				40-140
o-Terphenyl			89.2		94.2				40-140
2-Fluorobiphenyl			88.2		88.0				40-140
2-Bromonaphthalene			87.4		87.2				40-140

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LCS/LCSD Recovery Report

LCS ID: WG263992-2RA
LCSD ID: WG263992-3RA
Project:
SDG: TM0469
Report Date: 24-OCT-19
LCS File ID: CMJ2265.D

Received Date:
Extract Date: 13-OCT-19
Extracted By: AC
Extraction Method: SW846 3510C
Lab Prep Batch: WG263992
LCSD File ID: CMJ1266.d

Analysis Date: 22-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	919.	60.1	1190	77.8	ug/L	26*	25	40-140
C9-C18 Aliphatics	540.	301.	55.7	302.	55.9	ug/L	0	25	40-140
C19-C36 Aliphatics	720.	533.	74.0	545.	75.7	ug/L	2	25	40-140
Naphthalene	90.0	46.2	51.3	58.5	65.0	ug/L	23	25	40-140
2-Methylnaphthalene	90.0	47.9	53.2	60.6	67.3	ug/L	23	25	40-140
Phenanthrene	90.0	52.6	58.4	69.5	77.2	ug/L	28*	25	40-140
Acenaphthylene	90.0	46.4	51.6	59.9	66.6	ug/L	25*	25	40-140
Acenaphthene	90.0	48.3	53.7	62.4	69.3	ug/L	25*	25	40-140
Anthracene	90.0	52.2	58.0	68.7	76.3	ug/L	27*	25	40-140
Benzo(a)anthracene	90.0	54.4	60.4	70.7	78.6	ug/L	26*	25	40-140
Benzo(a)pyrene	90.0	53.2	59.1	69.1	76.8	ug/L	26*	25	40-140
Benzo(b)fluoranthene	90.0	59.6	66.2	73.1	81.2	ug/L	20	25	40-140
Benzo(g,h,i)perylene	90.0	58.6	65.1	76.6	85.1	ug/L	27*	25	40-140
Benzo(k)fluoranthene	90.0	53.6	59.6	74.0	82.2	ug/L	32*	25	40-140
Chrysene	90.0	56.4	62.7	73.7	81.9	ug/L	26*	25	40-140
Dibenzo(a,h)anthracene	90.0	55.9	62.1	70.3	78.1	ug/L	23	25	40-140
Fluoranthene	90.0	55.0	61.1	72.2	80.2	ug/L	27*	25	40-140
Fluorene	90.0	48.4	53.8	63.4	70.4	ug/L	27*	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	53.5	59.4	71.0	78.9	ug/L	28*	25	40-140
Pyrene	90.0	53.9	59.9	71.1	79.0	ug/L	28*	25	40-140
5-Alpha Androstane			49.8		52.2				40-140
o-Terphenyl			58.3		76.2				40-140
2-Fluorobiphenyl			58.4		78.8				40-140
2-Bromonaphthalene			57.9		78.4				40-140

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MS/MSD Recovery Report

MS ID: WG263730-4RA
MSD ID: WG263730-5RA
Sample ID: TM0469-11
Client ID: ZWM-95-15X_FAL19
Project:
SDG: TM0469
MS File ID: CMJ2190.D

Received Date:
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730
Report Date: 30-OCT-19
MSD File ID: CMJ1191a.d

Analysis Date: 17-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1500	1510	ug/L	U99	1270	1270	84.7	83.8	0	25	40-140
C9-C18 Aliphatics	529.	535.	ug/L	U99	277	262	52.3	49.0	6	25	40-140
C19-C36 Aliphatics	706.	713.	ug/L	U99	511	568	72.4	79.7	10	25	40-140
Naphthalene	88.2	89.1	ug/L	U2.0	58.2	60.2	66.0	67.6	3	25	40-140
2-Methylnaphthalene	88.2	89.1	ug/L	U2.0	61.2	63	69.4	70.7	3	25	40-140
Phenanthrene	88.2	89.1	ug/L	U2.0	69.7	75.8	79.0	85.1	8	25	40-140
Acenaphthylene	88.2	89.1	ug/L	U2.0	60.8	64.8	68.9	72.7	6	25	40-140
Acenaphthene	88.2	89.1	ug/L	U2.0	63.3	67.6	71.7	75.9	6	25	40-140
Anthracene	88.2	89.1	ug/L	U2.0	67.6	73.6	76.6	82.6	8	25	40-140
Benzo(a)anthracene	88.2	89.1	ug/L	U2.0	70	76.6	79.3	86.0	9	25	40-140
Benzo(a)pyrene	88.2	89.1	ug/L	U2.0	68.7	72.4	77.9	81.2	5	25	40-140
Benzo(b)fluoranthene	88.2	89.1	ug/L	U2.0	76	76.4	86.1	85.7	0	25	40-140
Benzo(g,h,i)perylene	88.2	89.1	ug/L	U2.0	73.8	82.3	83.6	92.4	11	25	40-140
Benzo(k)fluoranthene	88.2	89.1	ug/L	U2.0	70.1	83.9	79.4	94.2	18	25	40-140
Chrysene	88.2	89.1	ug/L	U2.0	72.7	78.7	82.4	88.3	8	25	40-140
Dibenzo(a,h)anthracene	88.2	89.1	ug/L	U2.0	65.9	70.5	74.7	79.1	7	25	40-140
Fluoranthene	88.2	89.1	ug/L	U2.0	72.1	79.2	81.7	88.9	9	25	40-140
Fluorene	88.2	89.1	ug/L	U2.0	64.7	69.1	73.3	77.5	6	25	40-140
Indeno(1,2,3-cd)pyrene	88.2	89.1	ug/L	U2.0	67.7	76.8	76.7	86.2	12	25	40-140
Pyrene	88.2	89.1	ug/L	U2.0	71.2	78.4	80.7	88.0	10	25	40-140
5-Alpha Androstane							43.6	44.1			40-140
o-Terphenyl							68.7	74.4			40-140
2-Fluorobiphenyl							82.8	85.5			40-140
2-Bromonaphthalene							82.2	84.8			40-140

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1 2 3 4 5 6 7 8 9 10 11 12 13 14

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : CMJ1067.D
Instrument ID : GC12

SDG : TM0469
Lab Sample ID : WG263730-1
Date Analyzed : 11-OCT-19
Time Analyzed : 11:11
Date Extracted : 09-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG263730-3	CMJ1069.D	10/11/19	12:42
69W-94-13_FAL19	TM0469-4	CMJ1074.D	10/11/19	16:27
ZWM-99-24X_FAL19	TM0469-5	CMJ1075.D	10/11/19	17:12
ZWM-99-23X_FAL19	TM0469-6	CMJ1076.D	10/11/19	17:58
ZWM-01-25X_FAL19	TM0469-8	CMJ1078.D	10/11/19	19:30
ZWM-99-22X_FAL19	TM0469-9	CMJ1079.D	10/11/19	20:16
69W-DUP1_FAL19	TM0469-10	CMJ1080.D	10/11/19	21:01
ZWM-95-15X_FAL19	TM0469-11	CMJ1081.D	10/11/19	21:47
69W-94-14_FAL19	TM0469-12	CMJ1082.D	10/11/19	22:33
Laboratory Control S	WG263730-2RA	CMJ1189.D	10/16/19	23:47
Matrix Spike	WG263730-4RA	CMJ1190.D	10/17/19	00:33
Matrix Spike Duplica	WG263730-5RA	CMJ1191.D	10/17/19	01:19

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : CMJ1067A.D
Instrument ID : GC12

SDG : TM0469
Lab Sample ID : WG263730-1
Date Analyzed : 11-OCT-19
Time Analyzed : 11:11
Date Extracted : 09-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG263730-3	CMJ1069A	10/11/19	12:42
69W-94-13_FAL19	TM0469-4	CMJ1074A	10/11/19	16:27
ZWM-99-24X_FAL19	TM0469-5	CMJ1075A	10/11/19	17:12
ZWM-99-23X_FAL19	TM0469-6	CMJ1076A	10/11/19	17:58
ZWM-01-25X_FAL19	TM0469-8	CMJ1078A	10/11/19	19:30
ZWM-99-22X_FAL19	TM0469-9	CMJ1079A	10/11/19	20:16
69W-DUP1_FAL19	TM0469-10	CMJ1080A	10/11/19	21:01
ZWM-95-15X_FAL19	TM0469-11	CMJ1081A	10/11/19	21:47
69W-94-14_FAL19	TM0469-12	CMJ1082A	10/11/19	22:33
Laboratory Control S	WG263730-2RA	CMJ1189A	10/16/19	23:47
Matrix Spike	WG263730-4RA	CMJ1190A	10/17/19	00:33
Matrix Spike Duplica	WG263730-5RA	CMJ1191A	10/17/19	01:19

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : CMJ2067.D
Instrument ID : GC12

SDG : TM0469
Lab Sample ID : WG263730-1
Date Analyzed : 11-OCT-19
Time Analyzed : 11:11
Date Extracted : 09-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG263730-3	CMJ2069.D	10/11/19	12:42
69W-94-13_FAL19	TM0469-4	CMJ2074.D	10/11/19	16:27
ZWM-99-24X_FAL19	TM0469-5	CMJ2075.D	10/11/19	17:12
ZWM-99-23X_FAL19	TM0469-6	CMJ2076.D	10/11/19	17:58
ZWM-01-25X_FAL19	TM0469-8	CMJ2078.D	10/11/19	19:30
ZWM-99-22X_FAL19	TM0469-9	CMJ2079.D	10/11/19	20:16
69W-DUP1_FAL19	TM0469-10	CMJ2080.D	10/11/19	21:01
ZWM-95-15X_FAL19	TM0469-11	CMJ2081.D	10/11/19	21:47
69W-94-14_FAL19	TM0469-12	CMJ2082.D	10/11/19	22:33
Laboratory Control S	WG263730-2RA	CMJ2189.D	10/16/19	23:47
Matrix Spike	WG263730-4RA	CMJ2190.D	10/17/19	00:33
Matrix Spike Duplica	WG263730-5RA	CMJ2191.D	10/17/19	01:19

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : CMJ1156.D
Instrument ID : GC12

SDG : TM0469
Lab Sample ID : WG263992-1
Date Analyzed : 15-OCT-19
Time Analyzed : 18:21
Date Extracted : 13-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
69W-94-13_FAL19	TM0469-4RE	CMJ1161.D	10/15/19	22:10
ZWM-95-18X_FAL19	TM0469-7RE	CMJ1162.D	10/15/19	22:56
ZWM-01-25X_FAL19	TM0469-8RE	CMJ1163.D	10/15/19	23:41
ZWM-99-22X_FAL19	TM0469-9RE	CMJ1164.D	10/16/19	00:27
Laboratory Control S	WG263992-2RA	CMJ1265.D	10/22/19	20:15
Laboratory Control S	WG263992-3RA	CMJ1266.D	10/22/19	21:01

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : CMJ1156A.D
Instrument ID : GC12

SDG : TM0469
Lab Sample ID : WG263992-1
Date Analyzed : 15-OCT-19
Time Analyzed : 18:21
Date Extracted : 13-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
69W-94-13_FAL19	TM0469-4RE	CMJ1161A	10/15/19	22:10
ZWM-95-18X_FAL19	TM0469-7RE	CMJ1162A	10/15/19	22:56
ZWM-01-25X_FAL19	TM0469-8RE	CMJ1163A	10/15/19	23:41
ZWM-99-22X_FAL19	TM0469-9RE	CMJ1164A	10/16/19	00:27
Laboratory Control S	WG263992-2RA	CMJ1265A	10/22/19	20:15
Laboratory Control S	WG263992-3RA	CMJ1266A	10/22/19	21:01

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : CMJ2264.D
Instrument ID : GC12

SDG : TM0469
Lab Sample ID : WG263992-1RA
Date Analyzed : 22-OCT-19
Time Analyzed : 19:29
Date Extracted : 13-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
69W-94-13_FAL19	TM0469-4RE	CMJ2161.D	10/15/19	22:10
ZWM-95-18X_FAL19	TM0469-7RE	CMJ2162.D	10/15/19	22:56
ZWM-01-25X_FAL19	TM0469-8RE	CMJ2163.D	10/15/19	23:41
ZWM-99-22X_FAL19	TM0469-9RE	CMJ2164.D	10/16/19	00:27
Laboratory Control S	WG263992-2RA	CMJ2265.D	10/22/19	20:15
Laboratory Control S	WG263992-3RA	CMJ2266.D	10/22/19	21:01

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0469
Project : DEVNS-LTM **Instrument ID:** GC12
Lab File IDs : CMF1044.d CMF1043.d CMF1038.d CMF1037.d CMF1036.d **Calibration Date(s):** 13-JUN-19 14:19 14-JUN-19 11:54

	Level 1 1.0000	Level 2 10.0000	Level 3 50.0000	Level 4 100.0000	Level 5 200.0000		Crv New	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	10121	7691	7743	9542	10604		AVG		9140		14.79794	25.00000	M (
Naphthalene	10354	7818	7777	9552	10639		AVG		9228		14.79823	25.00000	O
2-Methylnaphthalene	10324	7724	7714	9542	10565		AVG		9173		15.05377	25.00000	O
Acenaphthylene	10068	7691	7723	9503	10607		AVG		9118		14.76335	25.00000	O
Acenaphthene	10199	7794	7858	9655	10780		AVG		9257		14.75625	25.00000	O
Fluorene	11209	7667	7690	9510	10542		AVG		9324		17.36776	25.00000	O
Phenanthrene	9881	7557	7635	9364	10490		AVG		8985		14.79982	25.00000	O
Anthracene	9921	7600	7663	9415	10563		AVG		9032		14.85866	25.00000	O
Fluoranthene	10212	7709	7726	9516	10645		AVG		9162		15.04738	25.00000	O
Pyrene	10446	7822	7859	9642	10786		AVG		9311		15.09314	25.00000	O
Benzo(a)Anthracene	10020	7658	7751	9512	10649		AVG		9118		14.82904	25.00000	O
Chrysene	10099	7686	7703	9443	10552		AVG		9097		14.72339	25.00000	O
Benzo(b)Fluoranthene	10946	8177	8753	10286	12160		AVG		10065		16.09677	25.00000	O
Benzo(k)Fluoranthene	9124	7366	6922	9041	9475		AVG		8386		13.78132	25.00000	O
Benzo(a)Pyrene	9883	7589	7636	9393	10520		AVG		9004		14.79364	25.00000	O
Indeno(1,2,3-cd)Pyrene	9859	8028	8262	10120	12414		AVG		9737		18.09839	25.00000	O
Dibenzo(a,h)Anthracene	10148	7614	7628	9663	8777		AVG		8766		13.17941	25.00000	O
Benzo(g,h,i)Perylene	9366	7247	7334	9057	10098		AVG		8620		14.75636	25.00000	O
2-Fluorobiphenyl	10513	7092	7065	8744	9779		AVG		8639		18.02060	25.00000	
2-Bromonaphthalene	7500	4848	4895	5995	6697		AVG		5987		19.19711	25.00000	
O-Terphenyl	10808	7564	7547	9330	10378		AVG		9125		16.77326	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0469
Project : DEVNS-LTM **Instrument ID:** GC12
Lab File IDs : CMF2044.d CMF2043.d CMF2038.d CMF2037.d CMF2036.d **Calibration Date(s):** 13-JUN-19 14:19 14-JUN-19 11:54

	1.0000 Level 1	10.0000 Level 2	50.0000 Level 3	100.0000 Level 4	200.0000 Level 5		New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C18 Aliphatic	8647	6935	6914	8335	8081		AVG		7782		10.3892	25.00000	M
C19-C36 Aliphatic	8474	6865	6928	8365	8100		AVG		7747		10.1706	25.00000	S O
C-9	8436	7020	6946	8385	8119		AVG		7781		9.50010	30.00000	O
C-10	8433	6977	6965	8422	8123		AVG		7784		9.66881	25.00000	O
C-12	8800	7031	6992	8427	8171		AVG		7884		10.4974	25.00000	O
C-14	8699	6875	6894	8278	8060		AVG		7761		10.7283	25.00000	O
C-16	8953	6985	6907	8366	8079		AVG		7858		11.3353	25.00000	O
C-18	8558	6724	6778	8136	7932		AVG		7625		10.8818	25.00000	O
C-19	9013	6965	6985	8461	8197		AVG		7924		11.5491	25.00000	O
C-20	8454	6889	6895	8356	8109		AVG		7741		10.1361	25.00000	O
C-22	8594	6925	6923	8362	8115		AVG		7784		10.3169	25.00000	O
C-24	8825	6932	6934	8355	8123		AVG		7834		10.9841	25.00000	O
C-26	8326	6886	6894	8315	8067		AVG		7697		9.67415	25.00000	O
C-28	8380	6907	6993	8425	8159		AVG		7773		9.75473	25.00000	O
C-30	8618	6924	6970	8421	8148		AVG		7816		10.3773	25.00000	O
C-36	7583	6496	6832	8223	7884		AVG		7404		9.75558	25.00000	O
5-alpha androstane	10008	7872	7740	9406	9123		AVG		8830		11.1987	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-1
Lab File ID : CMJ1066.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/11/19 09:27
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	8937	0.010	-3.15288	25.00000	Averaged
60	2-Methylnaphthalene	9173	8855	0.010	-3.46780	25.00000	Averaged
70	Phenanthrene	8985	8753	0.010	-2.58166	25.00000	Averaged
80	Acenaphthylene	9118	8930	0.010	-2.06204	25.00000	Averaged
90	Acenaphthene	9257	8998	0.010	-2.80413	25.00000	Averaged
100	Anthracene	9032	8663	0.010	-4.08375	25.00000	Averaged
110	Benzo(a)Anthracene	9118	8779	0.010	-3.71398	25.00000	Averaged
120	Benzo(a)Pyrene	9004	8824	0.010	-2.00458	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	9069	0.010	-9.89429	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	8472	0.010	-1.71979	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	9010	0.010	7.44633	25.00000	Averaged
160	Chrysene	9097	8833	0.010	-2.89820	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	7904	0.010	-9.83671	25.00000	Averaged
180	Fluoranthene	9162	8935	0.010	-2.46872	25.00000	Averaged
190	Fluorene	9324	8844	0.010	-5.14057	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	9703	0.010	-0.34531	25.00000	Averaged
210	Pyrene	9311	9115	0.010	-2.10420	25.00000	Averaged
4	2-Fluorobiphenyl	8639	8573	0.010	-0.75826	25.00000	Averaged
6	2-Bromonaphthalene	5987	5786	0.010	-3.35745	25.00000	Averaged
11	O-Terphenyl	9125	8865	0.010	-2.85640	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-2
Lab File ID : CMJ1089.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/12/19 06:56
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	9058	0.010	-1.84079	25.00000	Averaged
60	2-Methylnaphthalene	9173	8921	0.010	-2.74811	25.00000	Averaged
70	Phenanthrene	8985	8811	0.010	-1.93615	25.00000	Averaged
80	Acenaphthylene	9118	9016	0.010	-1.12789	25.00000	Averaged
90	Acenaphthene	9257	9121	0.010	-1.46829	25.00000	Averaged
100	Anthracene	9032	8680	0.010	-3.89885	25.00000	Averaged
110	Benzo(a)Anthracene	9118	8813	0.010	-3.34284	25.00000	Averaged
120	Benzo(a)Pyrene	9004	8892	0.010	-1.24939	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	10168	0.010	1.02346	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	8559	0.010	-0.71681	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	8041	0.010	-4.10769	25.00000	Averaged
160	Chrysene	9097	8866	0.010	-2.53301	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	8174	0.010	-6.74927	25.00000	Averaged
180	Fluoranthene	9162	8975	0.010	-2.04041	25.00000	Averaged
190	Fluorene	9324	8955	0.010	-3.95456	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	9541	0.010	-2.01015	25.00000	Averaged
210	Pyrene	9311	9129	0.010	-1.95879	25.00000	Averaged
4	2-Fluorobiphenyl	8639	8699	0.010	0.69743	25.00000	Averaged
6	2-Bromonaphthalene	5987	5879	0.010	-1.79989	25.00000	Averaged
11	O-Terphenyl	9125	8979	0.010	-1.60218	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-3
Lab File ID : CMJ2066.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/11/19 09:27
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	7972	0.010	2.43922	25.00000	Averaged
30	C19-C36 Aliphatic	7747	8076	0.010	4.25199	25.00000	Averaged
370	C-9	7781	7950	0.010	2.17438	30.00000	Averaged
380	C-10	7784	8021	0.010	3.04016	25.00000	Averaged
390	C-12	7884	8016	0.010	1.67479	25.00000	Averaged
400	C-14	7761	7934	0.010	2.23396	25.00000	Averaged
410	C-16	7858	8042	0.010	2.34473	25.00000	Averaged
420	C-18	7625	7869	0.010	3.19754	25.00000	Averaged
430	C-19	7924	8089	0.010	2.08080	25.00000	Averaged
440	C-20	7741	8037	0.010	3.83177	25.00000	Averaged
450	C-22	7784	8023	0.010	3.07367	25.00000	Averaged
460	C-24	7834	8090	0.010	3.27586	25.00000	Averaged
470	C-26	7697	8068	0.010	4.81699	25.00000	Averaged
480	C-28	7773	8088	0.010	4.05665	25.00000	Averaged
490	C-30	7816	8129	0.010	4.00777	25.00000	Averaged
500	C-36	7404	8082	0.010	9.16509	25.00000	Averaged
44	5-alpha androstane	8830	8056	0.010	-8.76342	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-4
Lab File ID : CMJ2089.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/12/19 06:56
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	8080	0.010	3.82600	25.00000	Averaged
30	C19-C36 Aliphatic	7747	8238	0.010	6.34717	25.00000	Averaged
370	C-9	7781	8044	0.010	3.37988	30.00000	Averaged
380	C-10	7784	8129	0.010	4.43043	25.00000	Averaged
390	C-12	7884	8152	0.010	3.39805	25.00000	Averaged
400	C-14	7761	8063	0.010	3.88527	25.00000	Averaged
410	C-16	7858	8137	0.010	3.55625	25.00000	Averaged
420	C-18	7625	7956	0.010	4.32928	25.00000	Averaged
430	C-19	7924	8275	0.010	4.42824	25.00000	Averaged
440	C-20	7741	8147	0.010	5.24563	25.00000	Averaged
450	C-22	7784	8221	0.010	5.61462	25.00000	Averaged
460	C-24	7834	8259	0.010	5.43089	25.00000	Averaged
470	C-26	7697	8183	0.010	6.31100	25.00000	Averaged
480	C-28	7773	8278	0.010	6.49769	25.00000	Averaged
490	C-30	7816	8263	0.010	5.71882	25.00000	Averaged
500	C-36	7404	8280	0.010	11.83787	25.00000	Averaged
44	5-alpha androstane	8830	8110	0.010	-8.15015	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264246-1
Lab File ID : CMJ1155.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/15/19 16:53
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	9990	0.010	8.26212	25.00000	Averaged
60	2-Methylnaphthalene	9173	9990	0.010	8.90401	25.00000	Averaged
70	Phenanthrene	8985	9904	0.010	10.22323	25.00000	Averaged
80	Acenaphthylene	9118	10041	0.010	10.11775	25.00000	Averaged
90	Acenaphthene	9257	10164	0.010	9.79242	25.00000	Averaged
100	Anthracene	9032	9608	0.010	6.37775	25.00000	Averaged
110	Benzo(a)Anthracene	9118	9755	0.010	6.99039	25.00000	Averaged
120	Benzo(a)Pyrene	9004	9751	0.010	8.28766	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	10293	0.010	2.26564	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	9169	0.010	6.36850	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	9893	0.010	17.97696	25.00000	Averaged
160	Chrysene	9097	9753	0.010	7.21164	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	8752	0.010	-0.15984	25.00000	Averaged
180	Fluoranthene	9162	10080	0.010	10.02332	25.00000	Averaged
190	Fluorene	9324	9908	0.010	6.26524	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	10166	0.010	4.40476	25.00000	Averaged
210	Pyrene	9311	10245	0.010	10.03412	25.00000	Averaged
4	2-Fluorobiphenyl	8639	9701	0.010	12.29775	25.00000	Averaged
6	2-Bromonaphthalene	5987	6496	0.010	8.49925	25.00000	Averaged
11	O-Terphenyl	9125	10180	0.010	11.55478	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264246-2
Lab File ID : CMJ1177.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/16/19 13:37
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	9931	0.010	7.61800	25.00000	Averaged
60	2-Methylnaphthalene	9173	9885	0.010	7.75439	25.00000	Averaged
70	Phenanthrene	8985	9845	0.010	9.56704	25.00000	Averaged
80	Acenaphthylene	9118	9995	0.010	9.61195	25.00000	Averaged
90	Acenaphthene	9257	10135	0.010	9.47958	25.00000	Averaged
100	Anthracene	9032	9533	0.010	5.55026	25.00000	Averaged
110	Benzo(a)Anthracene	9118	9732	0.010	6.73266	25.00000	Averaged
120	Benzo(a)Pyrene	9004	9459	0.010	5.04963	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	10271	0.010	2.05599	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	8643	0.010	0.26365	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	9041	0.010	7.81528	25.00000	Averaged
160	Chrysene	9097	9773	0.010	7.43084	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	8726	0.010	-0.45599	25.00000	Averaged
180	Fluoranthene	9162	9981	0.010	8.94272	25.00000	Averaged
190	Fluorene	9324	9847	0.010	5.61378	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	10201	0.010	4.76381	25.00000	Averaged
210	Pyrene	9311	10188	0.010	9.41766	25.00000	Averaged
4	2-Fluorobiphenyl	8639	9615	0.010	11.30105	25.00000	Averaged
6	2-Bromonaphthalene	5987	6535	0.010	9.15402	25.00000	Averaged
11	O-Terphenyl	9125	10080	0.010	10.46549	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264246-3
Lab File ID : CMJ2155.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/15/19 16:53
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	8465	0.010	8.77737	25.00000	Averaged
30	C19-C36 Aliphatic	7747	8645	0.010	11.60041	25.00000	Averaged
370	C-9	7781	8424	0.010	8.26485	30.00000	Averaged
380	C-10	7784	8509	0.010	9.31682	25.00000	Averaged
390	C-12	7884	8498	0.010	7.78294	25.00000	Averaged
400	C-14	7761	8475	0.010	9.19303	25.00000	Averaged
410	C-16	7858	8526	0.010	8.49830	25.00000	Averaged
420	C-18	7625	8361	0.010	9.64857	25.00000	Averaged
430	C-19	7924	8673	0.010	9.44995	25.00000	Averaged
440	C-20	7741	8545	0.010	10.39307	25.00000	Averaged
450	C-22	7784	8658	0.010	11.23766	25.00000	Averaged
460	C-24	7834	8719	0.010	11.29807	25.00000	Averaged
470	C-26	7697	8574	0.010	11.38231	25.00000	Averaged
480	C-28	7773	8692	0.010	11.82567	25.00000	Averaged
490	C-30	7816	8661	0.010	10.80184	25.00000	Averaged
500	C-36	7404	8640	0.010	16.70284	25.00000	Averaged
44	5-alpha androstane	8830	8531	0.010	-3.38041	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264246-4
Lab File ID : CMJ2177.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/16/19 13:37
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	8736	0.010	12.25950	25.00000	Averaged
30	C19-C36 Aliphatic	7747	8983	0.010	15.95733	25.00000	Averaged
370	C-9	7781	8653	0.010	11.20611	30.00000	Averaged
380	C-10	7784	8766	0.010	12.61998	25.00000	Averaged
390	C-12	7884	8766	0.010	11.18607	25.00000	Averaged
400	C-14	7761	8749	0.010	12.72732	25.00000	Averaged
410	C-16	7858	8813	0.010	12.15095	25.00000	Averaged
420	C-18	7625	8672	0.010	13.71783	25.00000	Averaged
430	C-19	7924	9007	0.010	13.66403	25.00000	Averaged
440	C-20	7741	8860	0.010	14.45816	25.00000	Averaged
450	C-22	7784	9055	0.010	16.33729	25.00000	Averaged
460	C-24	7834	8917	0.010	13.82635	25.00000	Averaged
470	C-26	7697	8924	0.010	15.93683	25.00000	Averaged
480	C-28	7773	8988	0.010	15.63351	25.00000	Averaged
490	C-30	7816	9087	0.010	16.25537	25.00000	Averaged
500	C-36	7404	9024	0.010	21.88414	25.00000	Averaged
44	5-alpha androstane	8830	8853	0.010	0.26527	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-6
Lab File ID : CMJ1205.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/17/19 12:57
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	10061	0.010	9.02588	25.00000	Averaged
60	2-Methylnaphthalene	9173	10066	0.010	9.72617	25.00000	Averaged
70	Phenanthrene	8985	9995	0.010	11.24180	25.00000	Averaged
80	Acenaphthylene	9118	10094	0.010	10.70206	25.00000	Averaged
90	Acenaphthene	9257	10221	0.010	10.41550	25.00000	Averaged
100	Anthracene	9032	9643	0.010	6.75861	25.00000	Averaged
110	Benzo(a)Anthracene	9118	9880	0.010	8.35561	25.00000	Averaged
120	Benzo(a)Pyrene	9004	9942	0.010	10.40999	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	10673	0.010	6.04286	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	9480	0.010	9.96648	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	9852	0.010	17.48160	25.00000	Averaged
160	Chrysene	9097	9892	0.010	8.74473	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	8516	0.010	-2.85598	25.00000	Averaged
180	Fluoranthene	9162	10188	0.010	11.20937	25.00000	Averaged
190	Fluorene	9324	10002	0.010	7.27278	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	10472	0.010	7.55613	25.00000	Averaged
210	Pyrene	9311	10369	0.010	11.35984	25.00000	Averaged
4	2-Fluorobiphenyl	8639	9799	0.010	13.43741	25.00000	Averaged
6	2-Bromonaphthalene	5987	6576	0.010	9.84720	25.00000	Averaged
11	O-Terphenyl	9125	10191	0.010	11.68300	25.00000	Averaged

*** = Compound out of QC criteria**

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Katahdin Analytical Services A0000037 10/17/2019

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-8
Lab File ID : CMJ2205.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/17/19 12:57
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
20	C9-C18 Aliphatic	7782	9160	0.010	17.70090	25.00000	Averaged	
30	C19-C36 Aliphatic	7747	9387	0.010	21.17976	25.00000	Averaged	
370	C-9	7781	9007	0.010	15.76182	30.00000	Averaged	
380	C-10	7784	9215	0.010	18.37686	25.00000	Averaged	
390	C-12	7884	9218	0.010	16.92359	25.00000	Averaged	
400	C-14	7761	9172	0.010	18.17990	25.00000	Averaged	
410	C-16	7858	9258	0.010	17.81991	25.00000	Averaged	
420	C-18	7625	9089	0.010	19.18977	25.00000	Averaged	
430	C-19	7924	9412	0.010	18.77534	25.00000	Averaged	
440	C-20	7741	9301	0.010	20.16526	25.00000	Averaged	
450	C-22	7784	9366	0.010	20.32897	25.00000	Averaged	
460	C-24	7834	9377	0.010	19.70272	25.00000	Averaged	
470	C-26	7697	9327	0.010	21.16871	25.00000	Averaged	
480	C-28	7773	9460	0.010	21.70793	25.00000	Averaged	
490	C-30	7816	9531	0.010	21.93970	25.00000	Averaged	
500	C-36	7404	9323	0.010	25.93032	25.00000	Averaged	<-
44	5-alpha androstane	8830	9418	0.010	6.66248	25.00000	Averaged	

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264246-5
Lab File ID : CMJ1249b.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/22/19 08:10
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	8164	0.010	-11.52867	25.00000	Averaged
60	2-Methylnaphthalene	9173	8147	0.010	-11.19205	25.00000	Averaged
70	Phenanthrene	8985	7977	0.010	-11.21945	25.00000	Averaged
80	Acenaphthylene	9118	8124	0.010	-10.90791	25.00000	Averaged
90	Acenaphthene	9257	8264	0.010	-10.73120	25.00000	Averaged
100	Anthracene	9032	8024	0.010	-11.15802	25.00000	Averaged
110	Benzo(a)Anthracene	9118	8135	0.010	-10.77981	25.00000	Averaged
120	Benzo(a)Pyrene	9004	8002	0.010	-11.12738	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	8548	0.010	-15.06651	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	7723	0.010	-10.41477	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	7917	0.010	-5.59282	25.00000	Averaged
160	Chrysene	9097	8124	0.010	-10.69071	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	7670	0.010	-12.50387	25.00000	Averaged
180	Fluoranthene	9162	8127	0.010	-11.29739	25.00000	Averaged
190	Fluorene	9324	8047	0.010	-13.68828	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	8360	0.010	-14.14341	25.00000	Averaged
210	Pyrene	9311	8255	0.010	-11.34086	25.00000	Averaged
4	2-Fluorobiphenyl	8639	7589	0.010	-12.15021	25.00000	Averaged
6	2-Bromonaphthalene	5987	5215	0.010	-12.88825	25.00000	Averaged
11	O-Terphenyl	9125	8015	0.010	-12.16962	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264246-6
Lab File ID : CMJ1269.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/23/19 06:33
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	10017	0.010	8.54907	25.00000	Averaged
60	2-Methylnaphthalene	9173	10029	0.010	9.32523	25.00000	Averaged
70	Phenanthrene	8985	9874	0.010	9.89068	25.00000	Averaged
80	Acenaphthylene	9118	10015	0.010	9.82800	25.00000	Averaged
90	Acenaphthene	9257	10180	0.010	9.97368	25.00000	Averaged
100	Anthracene	9032	9924	0.010	9.87259	25.00000	Averaged
110	Benzo(a)Anthracene	9118	10079	0.010	10.54031	25.00000	Averaged
120	Benzo(a)Pyrene	9004	9980	0.010	10.83423	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	11042	0.010	9.71099	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	9740	0.010	12.99188	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	9422	0.010	12.35795	25.00000	Averaged
160	Chrysene	9097	10025	0.010	10.20218	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	9490	0.010	8.26650	25.00000	Averaged
180	Fluoranthene	9162	10054	0.010	9.74477	25.00000	Averaged
190	Fluorene	9324	9953	0.010	6.75153	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	10527	0.010	8.11854	25.00000	Averaged
210	Pyrene	9311	10230	0.010	9.86938	25.00000	Averaged
4	2-Fluorobiphenyl	8639	9334	0.010	8.05051	25.00000	Averaged
6	2-Bromonaphthalene	5987	6431	0.010	7.41856	25.00000	Averaged
11	O-Terphenyl	9125	9892	0.010	8.40691	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264246-7
Lab File ID : CMJ2249b.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/22/19 08:10
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	7650	0.010	-1.70504	25.00000	Averaged
30	C19-C36 Aliphatic	7747	7766	0.010	0.25288	25.00000	Averaged
370	C-9	7781	7731	0.010	-0.64196	30.00000	Averaged
380	C-10	7784	7830	0.010	0.58489	25.00000	Averaged
390	C-12	7884	7683	0.010	-2.55154	25.00000	Averaged
400	C-14	7761	7585	0.010	-2.27184	25.00000	Averaged
410	C-16	7858	7605	0.010	-3.22013	25.00000	Averaged
420	C-18	7625	7465	0.010	-2.10916	25.00000	Averaged
430	C-19	7924	7776	0.010	-1.87736	25.00000	Averaged
440	C-20	7741	7666	0.010	-0.96143	25.00000	Averaged
450	C-22	7784	7721	0.010	-0.81189	25.00000	Averaged
460	C-24	7834	7756	0.010	-0.99872	25.00000	Averaged
470	C-26	7697	7718	0.010	0.26689	25.00000	Averaged
480	C-28	7773	7849	0.010	0.97724	25.00000	Averaged
490	C-30	7816	7771	0.010	-0.58166	25.00000	Averaged
500	C-36	7404	7874	0.010	6.35454	25.00000	Averaged
44	5-alpha androstane	8830	7756	0.010	-12.15937	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264246-8
Lab File ID : CMJ2269.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0469
Analytical Date: 10/23/19 06:33
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	7899	0.010	1.49904	25.00000	Averaged
30	C19-C36 Aliphatic	7747	8107	0.010	4.65887	25.00000	Averaged
370	C-9	7781	7951	0.010	2.18826	30.00000	Averaged
380	C-10	7784	7954	0.010	2.18225	25.00000	Averaged
390	C-12	7884	7955	0.010	0.89574	25.00000	Averaged
400	C-14	7761	7874	0.010	1.45933	25.00000	Averaged
410	C-16	7858	7908	0.010	0.64274	25.00000	Averaged
420	C-18	7625	7751	0.010	1.64983	25.00000	Averaged
430	C-19	7924	8040	0.010	1.46170	25.00000	Averaged
440	C-20	7741	7943	0.010	2.61325	25.00000	Averaged
450	C-22	7784	8050	0.010	3.41669	25.00000	Averaged
460	C-24	7834	8096	0.010	3.34428	25.00000	Averaged
470	C-26	7697	8113	0.010	5.40109	25.00000	Averaged
480	C-28	7773	8201	0.010	5.51118	25.00000	Averaged
490	C-30	7816	8301	0.010	6.20601	25.00000	Averaged
500	C-36	7404	8116	0.010	9.61920	25.00000	Averaged
44	5-alpha androstane	8830	7950	0.010	-9.96393	25.00000	Averaged

*** = Compound out of QC criteria**

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FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.14 S2 : 10.52

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01		WG255596-5	06/13/19	1419	9.19	10.57
02		WG255596-4	06/13/19	1504	9.16	10.54
03		WG255596-3	06/13/19	1549	9.15	10.53
04		WG255596-2	06/14/19	1108	9.17	10.55
05		WG255596-1	06/14/19	1154	9.14	10.52
06		WG255596-6	06/14/19	1328		
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QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 2

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.45

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG255596-5	06/13/19	1419	15.51	
02		WG255596-4	06/13/19	1504	15.47	
03		WG255596-3	06/13/19	1549	15.46	
04		WG255596-2	06/14/19	1108	15.49	
05		WG255596-1	06/14/19	1154	15.45	
06		WG255596-6	06/14/19	1328		
07						
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09						
10						
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QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: TM0469

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.06 S2 : 10.45

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01		WG263959-1	10/11/19	0927	9.13	10.51
02	WG263730-BLA	WG263730-1	10/11/19	1111	9.13	10.51
03	WG263730-LCS	WG263730-3	10/11/19	1242	9.09	10.47
04	69W-94-13_FA	TM0469-4	10/11/19	1627	9.09	10.47
05	ZWM-99-24X_F	TM0469-5	10/11/19	1712	9.08	10.46
06	ZWM-99-23X_F	TM0469-6	10/11/19	1758	9.05	10.43
07	ZWM-01-25X_F	TM0469-8	10/11/19	1930	9.05	10.43
08	ZWM-99-22X_F	TM0469-9	10/11/19	2016	9.05	10.43
09	69W-DUP1_FAL	TM0469-10	10/11/19	2101	9.06	10.44
10	ZWM-95-15X_F	TM0469-11	10/11/19	2147	9.05	10.43
11	69W-94-14_FA	TM0469-12	10/11/19	2233	9.04	10.43
12		WG263959-2	10/12/19	0656	9.17	10.55
13		WG264246-1	10/15/19	1653	9.09	10.47
14	WG263992-BLA	WG263992-1	10/15/19	1821	9.08	10.46
15	69W-94-13_FA	TM0469-4RE	10/15/19	2210	9.05	10.43
16	ZWM-95-18X_F	TM0469-7RE	10/15/19	2256	9.05	10.43
17	ZWM-01-25X_F	TM0469-8RE	10/15/19	2341	9.05	10.43
18	ZWM-99-22X_F	TM0469-9RE	10/16/19	0027	9.05	10.43
19		WG264246-2	10/16/19	1337	9.15	10.53
20	WG263730-LCS	WG263730-2RA	10/16/19	2347	9.05	10.43

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 4

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: TM0469

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.06 S2 : 10.45

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01	ZWM-95-15X_F	WG263730-4RA	10/17/19	0033	9.04	10.42
02	ZWM-95-15X_F	WG263730-5RA	10/17/19	0119	9.04	10.42
03		WG263959-6	10/17/19	1257	9.08	10.46
04		WG264246-5	10/22/19	0810	9.11	10.49
05	WG263992-LCS	WG263992-2RA	10/22/19	2015	9.04	10.42
06	WG263992-LCS	WG263992-3RA	10/22/19	2101	9.05	10.43
07		WG264246-6	10/23/19	0633	9.12	10.50
08						
09						
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13						
14						
15						
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17						
18						
19						
20						

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: TM0469

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.37

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG263959-1	10/11/19	0927	15.43	
02	WG263730-BLA	WG263730-1	10/11/19	1111	15.43	
03	WG263730-LCS	WG263730-3	10/11/19	1242	15.40	
04	69W-94-13_FA	TM0469-4	10/11/19	1627	15.39	
05	ZWM-99-24X_F	TM0469-5	10/11/19	1712	15.38	
06	ZWM-99-23X_F	TM0469-6	10/11/19	1758	15.35	
07	ZWM-01-25X_F	TM0469-8	10/11/19	1930	15.35	
08	ZWM-99-22X_F	TM0469-9	10/11/19	2016	15.36	
09	69W-DUP1-FAL	TM0469-10	10/11/19	2101	15.36	
10	ZWM-95-15X_F	TM0469-11	10/11/19	2147	15.35	
11	69W-94-14_FA	TM0469-12	10/11/19	2233	15.36	
12		WG263959-2	10/12/19	0656	15.47	
13		WG264246-1	10/15/19	1653	15.40	
14	WG263992-BLA	WG263992-1	10/15/19	1821	15.39	
15	69W-94-13_FA	TM0469-4RE	10/15/19	2210	15.35	
16	ZWM-95-18X_F	TM0469-7RE	10/15/19	2256	15.36	
17	ZWM-01-25X_F	TM0469-8RE	10/15/19	2341	15.36	
18	ZWM-99-22X_F	TM0469-9RE	10/16/19	0027	15.36	
19		WG264246-2	10/16/19	1337	15.45	
20	WG263730-LCS	WG263730-2RA	10/16/19	2347	15.35	

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 3 of 4

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: TM0469

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.37

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01	ZWM-95-15X_F	WG263730-4RA	10/17/19	0033	15.35	
02	ZWM-95-15X_F	WG263730-5RA	10/17/19	0119	15.34	
03		WG263959-6	10/17/19	1257	15.38	
04		WG264246-5	10/22/19	0810	15.42	
05	WG263992-LCS	WG263992-2RA	10/22/19	2015	15.35	
06	WG263992-LCS	WG263992-3RA	10/22/19	2101	15.35	
07		WG264246-6	10/23/19	0633	15.42	
08						
09						
10						
11						
12						
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15						
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17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: SDGA02536

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 17.02

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG255596-11	06/13/19	1419	17.05	
02		WG255596-10	06/13/19	1504	17.03	
03		WG255596-9	06/13/19	1549	17.03	
04		WG255596-8	06/14/19	1108	17.04	
05		WG255596-7	06/14/19	1154	17.02	
06		WG255596-12	06/14/19	1328		
07						
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20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII DRO

Katahdin Analytical Services A0000049

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: TM0469

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.84

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG263959-3	10/11/19	0927	16.84	
02	WG263730-BLA	WG263730-1	10/11/19	1111	16.83	
03	WG263730-LCS	WG263730-3	10/11/19	1242	16.82	
04	69W-94-13_FA	TM0469-4	10/11/19	1627	16.82	
05	ZWM-99-24X_F	TM0469-5	10/11/19	1712	16.81	
06	ZWM-99-23X_F	TM0469-6	10/11/19	1758	16.80	
07	ZWM-01-25X_F	TM0469-8	10/11/19	1930	16.80	
08	ZWM-99-22X_F	TM0469-9	10/11/19	2016	16.80	
09	69W-DUP1_FAL	TM0469-10	10/11/19	2101	16.80	
10	ZWM-95-15X_F	TM0469-11	10/11/19	2147	16.80	
11	69W-94-14_FA	TM0469-12	10/11/19	2233	16.80	
12		WG263959-4	10/12/19	0656	16.85	
13		WG264246-3	10/15/19	1653	16.82	
14	69W-94-13_FA	TM0469-4RE	10/15/19	2210	16.79	
15	ZWM-95-18X_F	TM0469-7RE	10/15/19	2256	16.79	
16	ZWM-01-25X_F	TM0469-8RE	10/15/19	2341	16.79	
17	ZWM-99-22X_F	TM0469-9RE	10/16/19	0027	16.79	
18		WG264246-4	10/16/19	1337	16.83	
19	WG263730-LCS	WG263730-2RA	10/16/19	2347	16.78	
20	ZWM-95-15X_F	WG263730-4RA	10/17/19	0033	16.78	

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 2

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: TM0469

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.84

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01	ZWM-95-15X_F	WG263730-5RA	10/17/19	0119	16.77	
02		WG263959-8	10/17/19	1257	16.80	
03		WG264246-7	10/22/19	0810	16.80	
04	WG263992-BLA	WG263992-1RA	10/22/19	1929	16.77	
05	WG263992-LCS	WG263992-2RA	10/22/19	2015	16.77	
06	WG263992-LCS	WG263992-3RA	10/22/19	2101	16.77	
07		WG264246-8	10/23/19	0633	16.80	
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Katahdin Analytical Services A1000051

360325-Boston 360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC69W-FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

NOTE: Samples for metals need to be field filtered
Only one (1) sample bottle is needed for both SW6010/6020.
NI = native
WG = ground water on ICP

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2, Cool < 6°C

	Analytical Test Method	SW6010C/FLDFLT - Fe Mn	SW6010C/FLDFLT - Mn	SW6020A/FLDFLT - As
Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019		9		9

	Sample ID	Matrix	Date	Time	Samp Init.				Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
11	E9W-94-13 Fal19	WG	10/3/19	1205	MS	1	1	1	E9W-94-13	NI	3.00	13.00		
12	ZWM-99-24X-Fal19	WG	10/3/19	1425	MS	1	1	1	ZWM-99-24X	NI	2.50	15.52		
13														
14														
15														
16														
17														
18														
19														
20														
		Turnaround Time: 21 Days												

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
[signature]	10/4/19	1430	[signature]	10/4/19	1430
[signature]	10/4/19	1500	[signature]	10-4-19	1500
[signature]	10-4-19	1800			

Shipping Date / Carrier / Airbill Number

3.7 (CF) 3.6°C

Received by Laboratory: *(Signature, Date, Time)* **& condition**

[signature] 10-05-19 0925

Page 2 of 2

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
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(508) 508.366.7442, lekes@komangs.com

COC # AOC69W-FAL19

360325-Boston 360325-Boston

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:
FF: Field Filtered
NOTE: Samples for metals need to be field filtered
Only one (1) sample bottle is needed for both SW6010/6020.
N1 = Native sample
CV = Chris Vignola
Samples cooled to 4°C

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2, Cool < 6°C

Analytical Test Method

	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019					9		9						
	Sample ID	Matrix	Date	Time	Samp Init.	SW6010C/FLDFLT - Fe, Mn, As	SW6010C/FLDFLT - Mn	SW6020A/FLDFLT - As	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
11	ZWM-95-18X_FAL19	WG	10/2/19	1250	CV	X			ZWM-95-18X	N1	3.00	13.00	FF	1
12	ZWM-01-25X_FAL19	WG	10/2/19	1400	CV	X			ZWM-01-25X	N1	4.00	16.13	FF	1
13	ZWM-99-22X_FAL19	WG	10/3/19	0730	CV	X			ZWM-99-22X	N1	4.63	14.63	FF	1
14	~~ZWM-99~~ 69W-DUP_FAL19	WG	10/3/19	0735	CV	X			ZWM-99-22X	DUP	4.63	14.63	FF	1
15	69WP-08-01_FAL19	WG	10/3/19	1025	CV	X			69WP-08-01	N1	10.00	13.00	FF	1
16	69WP-13-01_FAL19	WG	10/3/19	1255	CV		X		69WP-13-01	N1	10.00	13.00	FF	1
17	ZWM-95-15X_FAL19	WG	10/4/19	1140	CV	X			ZWM-95-15X	N1	3.00	13.00	FF ; MS, MSD	1
18	69W-94-14_FAL19	WG	10/4/19	1305	CV	X			69W-94-14	N1	3.00	13.00	FF	1
19														
20														
		Turnaround Time: 21 Days												

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1455
	10-4-19	1700

Received by: *(Signature)*	Date	Time
	10-4-19	1500

Shipping Date / Carrier / Airbill Number
3.7(CF)3.6°C

Received by Laboratory: *(Signature, Date, Time)* **& condition**
10-05-19
0925

360325-Boston
360325-Boston
360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC69W-FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

NOTE: Samples for metals need to be field filtered
Only one (1) sample bottle is needed for both SW6010/6020.

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2, Cool < 6°C

		Analytical Test Method	SW6010C/FLDFLT - Fe Mn	SW6010C/FLDFLT - Mn	SW6020A/FLDFLT - As						
	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019		9		9						
	Sample ID	Matrix	Date	Time	Samp Init.				Location ID	Sample Type	Depth (ft bgs) Top - Bottom	Comments	Cooler
1	69W-94-13_FAL19	WG				X		X	69W-94-13	N1	3.00 - 13.00		1
2	69W-94-14_FAL19	WG				X		X	69W-94-14	N1	3.00 - 13.00		1
3	69WP-08-01_FAL19	WG				X		X	69WP-08-01	N1	10.00 - 13.00		1
4	69WP-13-01_FAL19	WG					X		69WP-13-01	N1	0.00 - 0.00	Mn only	1
5	ZWM-01-25X_FAL19	WG				X		X	ZWM-01-25X	N1	4.00 - 16.13		1
6	ZWM-95-15X_FAL19	WG				X		X	ZWM-95-15X	N1	3.00 - 15.87		1
7	ZWM-95-18X_FAL19	WG				X		X	ZWM-95-18X	N1	3.00 - 15.22		1
8	ZWM-99-22X_FAL19	WG				X		X	ZWM-99-22X	N1	4.60 - 14.63		1
9	ZWM-99-23X_FAL19	WG	10/3/19	1000	MM	X		X	ZWM-99-23X	N1	3.00 - 14.68		1
10	ZWM-99-24X_FAL19	WG				X		X	ZWM-99-24X	N1	2.50 - 15.52		1
		Turnaround Time: 21 Days											

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1500
	10-4-19	1800

Received by: *(Signature)*	Date	Time
	10-7-19	1154

Shipping Date / Carrier / Airbill Number

1 3.7 (CF) 3.6°C

Received by Laboratory: *(Signature, Date, Time)* **& condition**

Banda 100519 0935

Page 1 of 2

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

360325-Boston 360325-Boston 360325-Boston 360325-Boston 360325-Boston

COC # AOC69W-FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

FF = Field Filtered

NOTE: Samples for metals need to be field filtered
Only one (1) sample bottle is needed for both SW6010/6020.

N1 = Native sample — Samples cooled to 4°C
CV = Chris Vignola

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C

680-175052 Chain of Custody

	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019					Analytical Test Method: SW6010C/FLDFLT - Fe, Mn, As	SW6010C/FLDFLT - Mn	SW6020A/FLDFLT - As		Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
	Sample ID	Matrix	Date	Time	Samp Init.	9		9	Location ID					
11	ZWM-95-18X_FAL19	WG	10/2/19	1250	CV	X			ZWM-95-18X	N1	3.00	13.00	FF	1
12	ZWM-01-25X_FAL19	WG	10/2/19	1400	CV	X			ZWM-01-25X	N1	4.00	16.13	FF	1
13	ZWM-99-22X_FAL19	WG	10/3/19	0930	CV	X			ZWM-99-22X	N1	4.63	14.63	FF	1
14	~~ZWM-99-69W-DUP_FAL19~~	WG	10/3/19	0935	CV	X			ZWM-99-22X	DUP	4.63	14.63	FF	1
15	69WP-08-01_FAL19	WG	10/3/19	1035	CV	X			69WP-08-01	N1	10.00	13.00	FF	1
16	69WP-13-01_FAL19	WG	10/3/19	1255	CV		X		69WP-13-01	N1	10.00	13.00	FF	1
17	ZWM-95-15X_FAL19	WG	10/4/19	1140	CV	X			ZWM-95-15X	N1	3.00	13.00	FF ; MS, MSD	1
18	69W-94-14_FAL19	WG	10/4/19	1305	CV	X			69W-94-14	N1	3.00	13.00	FF	1
19														
20														
		Turnaround Time: 21 Days												

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
	10/4/19	1455		10-4-19	1500
	10-4-19	1800		10/5/19	0900

Shipping Date / Carrier / Airbill Number

1.4 IR#80.0 Transfer RP 10/5/19

Received by Laboratory: *(Signature, Date, Time)* **& condition**

360325-Boston 360325-Boston 360325-Boston 360325-Boston 360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC69W-FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

NOTE: Samples for metals need to be field filtered
Only one (1) sample bottle is needed for both SW6010/6020.

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2, Cool < 6°C

		Analytical Test Method	SW6010C/FLDFLT - Fe Mn	SW6010C/FLDFLT - Mn	SW6020A/FLDFLT - As						
	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019		9		9						
	Sample ID	Matrix	Date	Time	Samp Init.				Location ID	Sample Type	Depth (ft bgs) Top - Bottom	Comments	Cooler
1	~~69W-94-13_FAL19~~	~~WG~~				~~X~~		~~X~~	~~69W-94-13~~	~~N1~~	~~3.00 - 13.00~~		1
2	~~69W-94-14_FAL19~~	~~WG~~				X		X	~~69W-94-14~~	~~N1~~	3.00 - 13.00		1
3	~~69WP-08-01_FAL19~~	~~WG~~				~~X~~		X	~~69WP-08-01~~	~~N1~~	10.00 - ~~13.00~~		1
4	~~69WP-13-01_FAL19~~	~~WG~~					X		~~69WP-13-01~~	~~N1~~	0.00 - 0.00	Mn only	1
5	~~ZWM-01-25X_FAL19~~	~~WG~~				~~X~~		X	~~ZWM-01-25X~~	~~N1~~	4.00 - ~~16.13~~		1
6	~~ZWM-95-15X_FAL19~~	~~WG~~				~~X~~		X	~~ZWM-95-15X~~	~~N1~~	3.00 - ~~15.87~~		1
7	~~ZWM-95-18X_FAL19~~	~~WG~~				~~X~~		X	~~ZWM-95-18X~~	~~N1~~	~~3.00 - 15.22~~		1
8	~~ZWM-99-22X_FAL19~~	~~WG~~				~~X~~		X	~~ZWM-99-22X~~	~~N1~~	~~4.60 - 14.63~~		1
9	ZWM-99-23X_FAL19	WG	10/3/19	1000	MM	X		X	ZWM-99-23X	N1	3.00 - 14.68		1
10	~~ZWM-99-24X_FAL19~~	WG				~~X~~		~~X~~	~~ZWM-99-24X~~	~~N1~~	~~2.50 - 15.52~~		1
		Turnaround Time: 21 Days											

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1500
	10-7-19	1200

Received by: *(Signature)*	Date	Time
	10-7-19	1500
	10/5/19	0900

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC69W-FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com	
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:

NOTE: Samples for metals need to be field filtered
Only one (1) sample bottle is needed for both SW6010/6020.
NI = natural
WG = ground water on ICP

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2, Cool < 6°C

Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: SW6010C/FLDFLT - Fe Mn	SW6010C/FLDFLT - Mn	SW6020A/FLDFLT - As	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
						9		9						
11	69W-94-13 FAL19	WG	10/3/19	1205	MS	1	1	1	69W-94-13	NI	3.00	13.00		
12	ZWM-99-24X-FAL19	WG	10/3/19	1425	MS	1	1	1	ZWM-99-24X	NI	2.50	15.52		
13														
14														
15														
16														
17														
18														
19														
20														
		Turnaround Time: 21 Days												

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
	10/4/19	1430		10/4/19	1430
	10/4/19	1500		10/7-09	1500
	10-4-19	1700		10/5/19	0900

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

360325-Boston 360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

TM0469

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC69W-FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number,	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:
NI = native
WG = ground water
on ice

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2 x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6°C

Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: MADEP - EPH with PAHs	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
11	69W-99-13_Fall19	WG	10/3/19	1205	MS	2	69W-99-13	NI	3.00	17.00		
12	ZWM-99-24X_Fall19	WG	10/03/19	1425	MS	2	ZWM-99-24X	NI	2.50	15.52		
13												
14												
15												
16												
17												
18												
		Turnaround Time: 21 Days										

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1430
	10/4/19	1500
	10-4-19	1700
FedEx		

Received by: *(Signature)*	Date	Time
	10/4/19	1420
	10/7/19	1100
FedEx		
	10/05/19	1025

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

360325-Boston

360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC69W-FAL19

360325-Boston

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number,	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:

Equipment:

Analytical Test Method: MADEPEP - EPH with PAHs

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2 x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6°C

Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019 — 2

	Sample ID	Matrix	Date	Time	Samp Init.		Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	~~69W-94-13_FAL19~~	WG				X	~~69W-94-13~~	N1	~~3.00~~	~~13.00~~		1
2	~~69W-94-14_FAL19~~	WG				X	~~69W-94-14~~	N1	~~3.00~~	~~13.00~~		1
3	~~ZWM-01-25X_FAL19~~	WG				X	ZWM-01-25X	N1	4.00	16.13		1
4	~~ZWM-95-15X_FAL19~~	WG				X	ZWM-95-15X	N1	3.00	15.87		1
5	~~ZWM-95-18X_FAL19~~	WG				X	ZWM-95-18X	N1	3.00	15.22		1
6	~~ZWM-99-22X_FAL19~~	WG				X	~~ZWM-99-22X~~	N1	~~4.60~~	~~14.63~~		1
7	ZWM-99-23X_FAL19	WG	10/3/19	1000	MM	X	ZWM-99-23X	N1	3.00	14.68		1
8	~~ZWM-99-24X_FAL19~~	WG				X	~~ZWM-99-24X~~	N1	~~2.50~~	~~15.52~~		1
9												
10												
		Turnaround Time: 21 Days										

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1500
	10-4-19	1500
FedEx		

Received by: *(Signature)*	Date	Time
	10-4-19	15
FedEx		
	10/05/19	1025

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # AOC69W-FAL19

360325-Boston

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number,	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:
CV = Chris Vignola
N1 => Native sample
Samples cooled to 4°C

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2 x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6°C

Event: KOMAN, Long Term Monitoring, AOC 69W Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: MADEPEP - EPH with PAHs	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
						2						
11	ZWM-95-18X_FAL19	WG	10/2/19	1250	CV	X	ZWM-95-18X	N1	3.00	13.00		1
12	ZWM-01-25X_FAL19	WG	10/2/19	1400	CV	X	ZWM-01-25X	N1	4.00	16.13		1
13	ZWM-99-22X_FAL19	WG	10/3/19	0730	CV	X	ZWM-99-22X	N1	4.63	14.63		1
14	69W-DUP1_FAL19	WG	10/3/19	0735	CV	X	ZWM-99-22X	DUP	4.63	14.63		1
15	ZWM-95-15X_FAL19	WG	10/4/19	1140	CV	X	ZWM-95-15X	N1	3.00	13.00	MS, MSD	1
16	69W-94-14_FAL19	WG	10/4/19	1305	CV	X	69W-94-14	N1	3.00	13.00		1
17												
18												
		Turnaround Time: 21 Days										

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1455
	10/4/19	1900
FedEx		

Received by: *(Signature)*	Date	Time
	10-4-19	1500
FedEx		
	10/05/19	12:25

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

Page 2 of 2

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175052-2

Login Number: 175052
List Number: 1
Creator: Banda, Christy S

List Source: Eurofins TestAmerica, Savannah

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175052-2
Project/Site: LTM / AOC 69W Fall 2019

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	SAVLAB	
Alabama	State	41450	06-30-20
Alaska	State	GA00006	06-30-20
Alaska (UST)	State	17-016	09-30-20
ANAB	Dept. of Defense ELAP	L2463	09-22-22
ANAB	DoD	L2463	09-22-22
ANAB	ISO/IEC 17025	L2463.01	09-22-22
ANAB	ISO/IEC 17025	L2463.01	09-22-22
Arizona	State	AZ0808	12-14-19
Arkansas DEQ	State	19-015-0	02-01-20
Arkansas DEQ	State Program	88-0692	02-01-20
California	State	2939	06-30-20
Colorado	State	GA00006	12-31-19
Connecticut	State	PH-0161	03-31-21
Florida	NELAP	E87052	06-30-20
GA Dept. of Agriculture	State Program	N/A	06-12-20
Georgia	State	E87052	06-30-20
Georgia	State Program	N/A	06-30-20
Georgia (DW)	State	803	06-30-20
Guam	State	19-007R	04-17-20
Hawaii	State	<cert No.>	06-30-20
Indiana	State	C-GA-02	06-30-20
Iowa	State	353	09-22-20
Kansas	NELAP	E-10322	10-15-20
Kentucky (DW)	State	KY90084	12-31-19
Kentucky (UST)	State	<cert No.>	06-30-20
Kentucky (UST)	State Program	18	06-30-20
Kentucky (WW)	State	KY90084	12-31-19
Kentucky (WW)	State Program	90084	12-31-19
Louisiana	NELAP	02011	06-30-20
Louisiana (DW)	State	LA009	12-31-19
Maine	State	GA00006	09-26-20
Maryland	State	250	12-31-19
Massachusetts	State	M-GA006	06-30-20
Massachusetts	State Program	M-GA006	06-30-20
Michigan	State	9925	06-30-20
Mississippi	State	<cert No.>	06-30-20
Mississippi	State Program	N/A	06-30-20
Nebraska	State	NE-OS-7-04	06-30-20
Nebraska	State Program	TestAmerica-Savannah	06-30-20
New Hampshire	NELAP	2096	05-29-20
New Hampshire	NELAP	2096	05-29-20
New Jersey	NELAP	GA769	06-30-20
New Mexico	State	GA00006	06-30-20
New York	NELAP	10842	04-01-20
North Carolina (DW)	State	13701	07-31-20
North Carolina (DW)	State Program	13701	07-31-20
North Carolina (WW/SW)	State	269	12-31-19
North Carolina (WW/SW)	State Program	269	12-31-19
Oklahoma	State	9984	08-31-20

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175052-2
Project/Site: LTM / AOC 69W Fall 2019

Laboratory: Eurofins TestAmerica, Savannah (Continued)

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

Authority	Program	Identification Number	Expiration Date
Pennsylvania	NELAP	68-00474	06-30-20
Puerto Rico	State	GA00006	01-01-20
South Carolina	State	98001	06-30-20
Tennessee	State	02961	06-30-20
Texas	NELAP	T104704185-19-13	11-30-19
Texas	NELAP	T1047004185-19-3	11-30-19
Texas	TCEQ Water Supply	T104704185	09-23-20
US Fish & Wildlife	US Federal Programs	LE058448-0	07-31-20
Virginia	NELAP	10509	06-14-20
Washington	State	C805	06-10-20
West Virginia (DW)	State	9950C	12-31-19
West Virginia (DW)	State Program	9950C	12-31-19
West Virginia DEP	State	094	11-30-19
Wisconsin	State	999819810	08-31-20
Wyoming	State	8TMS-L	06-30-20 *
Wyoming	State Program	8TMS-L	06-30-16 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-175052-1
Client Project/Site: LTM / DCL Fall 2019
Revision: 1

For:
KOMAN Government Solutions, LLC
293 Boston Post Road West
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Authorized for release by:
12/9/2019 9:31:48 AM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

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

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

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

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Job ID: 680-175052-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: LTM / DCL Fall 2019

Report Number: 680-175052-1

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 the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 10/5/2019 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 0.7º C, 1.1º C, 1.4º C, 1.9º C and 3.6º C.

PESTICIDES AND PCBS
Sample LFM-99-02B_FAL19 (680-175052-1) was analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 10/08/2019 and analyzed on 10/15/2019.

The continuing calibration verification (CCV) associated with batch 680-591047 recovered above the upper control limit for PCB-1260, Toxaphene, Chlordane (gamma.) and Endrin. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: LFM-99-02B_FAL19 (680-175052-1).

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

METALS (ICP)
Sample LFM-99-02B_FAL19 (680-175052-1) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/06/2019 and analyzed on 10/07/2019.

Barium was detected in method blank MB 680-589551/1-A at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Selenium failed the recovery criteria high for the MS of sample LFM-99-02B_FAL19MS (680-175052-1) in batch 680-589935.

Refer to the QC report for details.

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

METALS
Sample LFM-99-02B_FAL19 (680-175052-1) was analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 10/06/2019 and analyzed on 10/11/2019.

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

MERCURY
Sample LFM-99-02B_FAL19 (680-175052-1) was analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 10/06/2019 and analyzed on 10/07/2019.

Job ID: 680-175052-1 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

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

ALKALINITY
Sample LFM-99-02B_FAL19 (680-175052-1) was analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 10/08/2019.

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

TOTAL DISSOLVED SOLIDS
Sample LFM-99-02B_FAL19 (680-175052-1) was analyzed for total dissolved solids in accordance with SM 2540C. The samples were analyzed on 10/09/2019.

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

NITRATE-NITRITE AS NITROGEN
Sample LFM-99-02B_FAL19 (680-175052-1) was analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 10/10/2019.

Nitrate/Nitrite-N failed the recovery criteria low for the MSD of sample LFM-99-02B_FAL19MSD (680-175052-1) in batch 280-473668. Nitrate/Nitrite-N exceeded the RPD limit.

Refer to the QC report for details.

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

CHEMICAL OXYGEN DEMAND
Sample LFM-99-02B_FAL19 (680-175052-1) was analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 10/09/2019.

Chemical Oxygen Demand was detected in method blank MB 280-473414/5 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Chemical Oxygen Demand failed the recovery criteria low for the MS/MSD of sample LFM-99-02B_FAL19 (680-175052-1) in batch 280-473414.

Refer to the QC report for details.

Sample LFM-99-02B_FAL19 (680-175052-1)[2X] required dilution prior to analysis due to the chloride pre-screening result(s) obtained. The reporting limits have been adjusted accordingly.

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

CYANIDE
Sample LFM-99-02B_FAL19 (680-175052-1) was analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 10/15/2019.

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

ANIONS BY ION CHROMATOGRAPHY (28 DAY)
Sample LFM-99-02B_FAL19 (680-175052-1) was analyzed for Anions by Ion Chromatography (28 Day) in accordance with SW 846 9056A. The samples were analyzed on 10/10/2019.

Sample LFM-99-02B_FAL19 (680-175052-1)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Job ID: 680-175052-1 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Fall 2019

Job ID: 680-175052-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-175052-1	LFM-99-02B_FAL19	WG	10/04/19 11:35	10/05/19 09:25	

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Fall 2019

Job ID: 680-175052-1

Method	Method Description	Protocol	Laboratory
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
9056A	Anions, Ion Chromatography	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL DEN
410.4	COD	MCAWW	TAL DEN
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
MA-EPH	MADEP EPH (Extractable Petroleum Hydroca	MA DEP	
MA-VPH	MADEP VPH Volatile Petroleum Hydrocarbon	MA DEP	
3010A	Preparation, Total Metals	SW846	TAL SAV
3520C	Liquid-Liquid Extraction (Continuous)	SW846	TAL SAV
7470A	Preparation, Mercury	SW846	TAL SAV
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency
MA DEP = Massachusetts Department Of Environmental Protection
MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074
TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
D	The reported value is from a dilution.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
D	The reported value is from a dilution.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U	Undetected at the Limit of Detection.

Glossary

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

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Fall 2019

Job ID: 680-175052-1

Client Sample ID: LFM-99-02B_FAL19

Date Collected: 10/04/19 11:35
Date Received: 10/05/19 09:25

Lab Sample ID: 680-175052-1

Matrix: WG

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0089	U	0.025	0.0089	0.0036	ug/L		10/15/19 21:17	1
alpha-BHC	0.0049	U	0.025	0.0049	0.0017	ug/L		10/15/19 21:17	1
beta-BHC	0.0089	U	0.025	0.0089	0.0045	ug/L		10/15/19 21:17	1
Chlordane (technical)	0.15	U M Q	0.25	0.15	0.047	ug/L		10/15/19 21:17	1
4,4'-DDD	0.0049	U	0.025	0.0049	0.0031	ug/L		10/15/19 21:17	1
4,4'-DDE	0.0049	U M	0.025	0.0049	0.0025	ug/L		10/15/19 21:17	1
4,4'-DDT	0.0089	U	0.025	0.0089	0.0035	ug/L		10/15/19 21:17	1
delta-BHC	0.0089	U	0.025	0.0089	0.0037	ug/L		10/15/19 21:17	1
Dieldrin	0.0049	U	0.025	0.0049	0.0019	ug/L		10/15/19 21:17	1
Endosulfan I	0.0049	U	0.025	0.0049	0.0017	ug/L		10/15/19 21:17	1
Endosulfan II	0.0049	U	0.025	0.0049	0.0021	ug/L		10/15/19 21:17	1
Endosulfan sulfate	0.0049	U	0.025	0.0049	0.0025	ug/L		10/15/19 21:17	1
Endrin	0.0049	U	0.025	0.0049	0.0026	ug/L		10/15/19 21:17	1
Endrin aldehyde	0.0049	U	0.025	0.0049	0.0030	ug/L		10/15/19 21:17	1
Endrin ketone	0.0049	U	0.025	0.0049	0.0023	ug/L		10/15/19 21:17	1
gamma-BHC (Lindane)	0.0049	U	0.025	0.0049	0.0018	ug/L		10/15/19 21:17	1
Heptachlor	0.0089	U	0.025	0.0089	0.0035	ug/L		10/15/19 21:17	1
Heptachlor epoxide	0.0049	U	0.025	0.0049	0.0018	ug/L		10/15/19 21:17	1
Methoxychlor	0.0089	U	0.025	0.0089	0.0048	ug/L		10/15/19 21:17	1
PCB-1016	0.18	U M	0.49	0.18	0.089	ug/L		10/15/19 21:17	1
PCB-1221	0.16	U	0.49	0.16	0.094	ug/L		10/15/19 21:17	1
PCB-1232	0.22	U M Q	0.49	0.22	0.12	ug/L		10/15/19 21:17	1
PCB-1242	0.22	U M	0.49	0.22	0.094	ug/L		10/15/19 21:17	1
PCB-1248	0.22	U M	0.49	0.22	0.10	ug/L		10/15/19 21:17	1
PCB-1254	0.16	U M	0.49	0.16	0.054	ug/L		10/15/19 21:17	1
PCB-1260	0.18	U Q	0.49	0.18	0.059	ug/L		10/15/19 21:17	1
Toxaphene	0.40	U M Q	2.5	0.40	0.20	ug/L		10/15/19 21:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*55*		*14 - 130*	*10/08/19 14:00*	*10/15/19 21:17*	*1*
Tetrachloro-m-xylene	*58*		*44 - 124*	*10/08/19 14:00*	*10/15/19 21:17*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**420**	**D**	2.5	2.5	1.0	mg/L		10/10/19 20:41	5
Sulfate	**19**	**D**	5.0	5.0	2.0	mg/L		10/10/19 20:41	5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**24**		10	5.0	1.7	ug/L		10/07/19 21:02	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		10/07/19 21:02	1
Chromium	4.0	U	10	4.0	1.6	ug/L		10/07/19 21:02	1
Copper	5.0	U	20	5.0	1.8	ug/L		10/07/19 21:02	1
Iron	50	U	50	50	17	ug/L		10/07/19 21:02	1
Lead	10	U	10	10	3.9	ug/L		10/07/19 21:02	1
Manganese	3.0	U	10	3.0	1.0	ug/L		10/07/19 21:02	1
Selenium	20	U J1	20	20	9.9	ug/L		10/07/19 21:02	1
Silver	1.5	U	10	1.5	0.60	ug/L		10/07/19 21:02	1

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Fall 2019

Job ID: 680-175052-1

Client Sample ID: LFM-99-02B_FAL19

Date Collected: 10/04/19 11:35
Date Received: 10/05/19 09:25

Lab Sample ID: 680-175052-1

Matrix: WG

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/11/19 23:11	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/07/19 18:49	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	0.55	J1	0.10	0.050	0.019	mg/L		10/10/19 18:33	1
Chemical Oxygen Demand	36	J J1 D	40	40	17	mg/L		10/09/19 10:30	2
Cyanide, Total	0.0026	J	0.010	0.0050	0.0025	mg/L		10/15/19 16:23	1
Alkalinity	89		10	10	3.1	mg/L		10/08/19 22:40	1
Total Dissolved Solids (TDS)	850		20	20	9.4	mg/L		10/09/19 10:10	1

Surrogate Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Fall 2019

Job ID: 680-175052-1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCBP1 (14-130)	TCX1 (44-124)
LCS 680-589860/20-A	Lab Control Sample	63	72
LCS 680-589860/25-A	Lab Control Sample	63	61
LCSD 680-589860/26-A	Lab Control Sample Dup	71	65
MB 680-589860/19-A	Method Blank	73	63

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Matrix: WG **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCBP1 (14-130)	TCX1 (44-124)
680-175052-1	LFM-99-02B_FAL19	55	58
680-175052-1 MS	LFM-99-02B_FAL19	47	72
680-175052-1 MSD	LFM-99-02B_FAL19	52	64

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-589860/19-A
Matrix: Water
Analysis Batch: 591047

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 589860

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0090	U	0.025	0.0090	0.0036	ug/L		10/15/19 19:03	1
alpha-BHC	0.0050	U	0.025	0.0050	0.0017	ug/L		10/15/19 19:03	1
beta-BHC	0.0090	U	0.025	0.0090	0.0046	ug/L		10/15/19 19:03	1
Chlordane (technical)	0.15	U M	0.25	0.15	0.048	ug/L		10/15/19 19:03	1
4,4'-DDD	0.0050	U M	0.025	0.0050	0.0032	ug/L		10/15/19 19:03	1
4,4'-DDE	0.0050	U M	0.025	0.0050	0.0026	ug/L		10/15/19 19:03	1
4,4'-DDT	0.0090	U	0.025	0.0090	0.0035	ug/L		10/15/19 19:03	1
delta-BHC	0.0090	U	0.025	0.0090	0.0038	ug/L		10/15/19 19:03	1
Dieldrin	0.0050	U	0.025	0.0050	0.0019	ug/L		10/15/19 19:03	1
Endosulfan I	0.0050	U	0.025	0.0050	0.0018	ug/L		10/15/19 19:03	1
Endosulfan II	0.0050	U	0.025	0.0050	0.0021	ug/L		10/15/19 19:03	1
Endosulfan sulfate	0.0050	U	0.025	0.0050	0.0026	ug/L		10/15/19 19:03	1
Endrin	0.0050	U	0.025	0.0050	0.0027	ug/L		10/15/19 19:03	1
Endrin aldehyde	0.0050	U	0.025	0.0050	0.0031	ug/L		10/15/19 19:03	1
Endrin ketone	0.0050	U M	0.025	0.0050	0.0023	ug/L		10/15/19 19:03	1
gamma-BHC (Lindane)	0.0050	U	0.025	0.0050	0.0018	ug/L		10/15/19 19:03	1
Heptachlor	0.0090	U	0.025	0.0090	0.0036	ug/L		10/15/19 19:03	1
Heptachlor epoxide	0.0050	U	0.025	0.0050	0.0019	ug/L		10/15/19 19:03	1
Methoxychlor	0.0090	U	0.025	0.0090	0.0049	ug/L		10/15/19 19:03	1
PCB-1016	0.18	U	0.50	0.18	0.090	ug/L		10/15/19 19:03	1
PCB-1221	0.17	U	0.50	0.17	0.095	ug/L		10/15/19 19:03	1
PCB-1232	0.23	U	0.50	0.23	0.13	ug/L		10/15/19 19:03	1
PCB-1242	0.23	U	0.50	0.23	0.095	ug/L		10/15/19 19:03	1
PCB-1248	0.23	U M	0.50	0.23	0.11	ug/L		10/15/19 19:03	1
PCB-1254	0.17	U	0.50	0.17	0.055	ug/L		10/15/19 19:03	1
PCB-1260	0.18	U	0.50	0.18	0.060	ug/L		10/15/19 19:03	1
Toxaphene	0.40	U	2.5	0.40	0.20	ug/L		10/15/19 19:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*73*		*14 - 130*	*10/08/19 14:00*	*10/15/19 19:03*	*1*
Tetrachloro-m-xylene	*63*		*44 - 124*	*10/08/19 14:00*	*10/15/19 19:03*	*1*

Lab Sample ID: LCS 680-589860/20-A
Matrix: Water
Analysis Batch: 591047

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 589860

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.0500	0.0257		ug/L		51	45 - 134
alpha-BHC	0.0500	0.0465		ug/L		93	54 - 138
beta-BHC	0.0500	0.0520		ug/L		104	56 - 136
4,4'-DDD	0.0500	0.0472		ug/L		94	56 - 143
4,4'-DDE	0.0500	0.0434		ug/L		87	57 - 135
4,4'-DDT	0.0500	0.0508		ug/L		102	51 - 143
delta-BHC	0.0500	0.0534		ug/L		107	52 - 142
Dieldrin	0.0500	0.0531		ug/L		106	60 - 136
Endosulfan I	0.0500	0.0461		ug/L		92	62 - 126
Endosulfan II	0.0500	0.0456		ug/L		91	52 - 135
Endosulfan sulfate	0.0500	0.0534		ug/L		107	62 - 133

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCS 680-589860/20-A
Matrix: Water
Analysis Batch: 591047

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 589860

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Endrin	0.0500	0.0578		ug/L		116	60 - 138
Endrin aldehyde	0.0500	0.0492		ug/L		98	51 - 132
Endrin ketone	0.0500	0.0516		ug/L		103	58 - 134
gamma-BHC (Lindane)	0.0500	0.0464		ug/L		93	59 - 134
Heptachlor	0.0500	0.0360		ug/L		72	54 - 130
Heptachlor epoxide	0.0500	0.0473		ug/L		95	61 - 133
Methoxychlor	0.0500	0.0609		ug/L		122	54 - 145

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*63*		*14 - 130*
Tetrachloro-m-xylene	*72*		*44 - 124*

Lab Sample ID: LCS 680-589860/25-A
Matrix: Water
Analysis Batch: 591047

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 589860

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	3.00	2.21		ug/L		74	46 - 129
PCB-1260	3.00	3.50		ug/L		117	45 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*63*		*14 - 130*
Tetrachloro-m-xylene	*61*		*44 - 124*

Lab Sample ID: LCSD 680-589860/26-A
Matrix: Water
Analysis Batch: 591047

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 589860

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016	3.00	2.42		ug/L		81	46 - 129	9	30
PCB-1260	3.00	3.89		ug/L		130	45 - 134	10	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*71*		*14 - 130*
Tetrachloro-m-xylene	*65*		*44 - 124*

Lab Sample ID: 680-175052-1 MS
Matrix: WG
Analysis Batch: 591047

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA
Prep Batch: 589860

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.0089	U	0.0499	0.0395		ug/L		79	45 - 134
alpha-BHC	0.0049	U	0.0499	0.0447		ug/L		90	54 - 138
beta-BHC	0.0089	U	0.0499	0.0540		ug/L		108	56 - 136
4,4'-DDD	0.0049	U	0.0499	0.0484		ug/L		97	56 - 143
4,4'-DDE	0.0049	U M	0.0499	0.0452		ug/L		91	57 - 135
4,4'-DDT	0.0089	U	0.0499	0.0509		ug/L		102	51 - 143
delta-BHC	0.0089	U	0.0499	0.0552		ug/L		111	52 - 142

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: 680-175052-1 MS
Matrix: WG
Analysis Batch: 591047

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA
Prep Batch: 589860

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Dieldrin	0.0049	U	0.0499	0.0524		ug/L		105	60 - 136
Endosulfan I	0.0049	U	0.0499	0.0455		ug/L		91	62 - 126
Endosulfan II	0.0049	U	0.0499	0.0448		ug/L		90	52 - 135
Endosulfan sulfate	0.0049	U	0.0499	0.0522		ug/L		105	62 - 133
Endrin	0.0049	U	0.0499	0.0649		ug/L		130	60 - 138
Endrin aldehyde	0.0049	U	0.0499	0.0450		ug/L		90	51 - 132
Endrin ketone	0.0049	U	0.0499	0.0494		ug/L		99	58 - 134
gamma-BHC (Lindane)	0.0049	U	0.0499	0.0461		ug/L		92	59 - 134
Heptachlor	0.0089	U	0.0499	0.0456		ug/L		91	54 - 130
Heptachlor epoxide	0.0049	U	0.0499	0.0478		ug/L		96	61 - 133
Methoxychlor	0.0089	U	0.0499	0.0584		ug/L		117	54 - 145

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*47*		*14 - 130*
Tetrachloro-m-xylene	*72*		*44 - 124*

Lab Sample ID: 680-175052-1 MSD
Matrix: WG
Analysis Batch: 591047

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA
Prep Batch: 589860

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin	0.0089	U	0.0490	0.0331		ug/L		67	45 - 134	18	30
alpha-BHC	0.0049	U	0.0490	0.0377		ug/L		77	54 - 138	17	30
beta-BHC	0.0089	U	0.0490	0.0475		ug/L		97	56 - 136	13	30
4,4'-DDD	0.0049	U	0.0490	0.0424		ug/L		87	56 - 143	13	30
4,4'-DDE	0.0049	U M	0.0490	0.0386		ug/L		79	57 - 135	16	30
4,4'-DDT	0.0089	U	0.0490	0.0450		ug/L		92	51 - 143	12	30
delta-BHC	0.0089	U	0.0490	0.0462		ug/L		94	52 - 142	18	30
Dieldrin	0.0049	U	0.0490	0.0465		ug/L		95	60 - 136	12	30
Endosulfan I	0.0049	U	0.0490	0.0384		ug/L		78	62 - 126	17	30
Endosulfan II	0.0049	U	0.0490	0.0401		ug/L		82	52 - 135	11	30
Endosulfan sulfate	0.0049	U	0.0490	0.0488		ug/L		99	62 - 133	7	30
Endrin	0.0049	U	0.0490	0.0549		ug/L		112	60 - 138	17	30
Endrin aldehyde	0.0049	U	0.0490	0.0402		ug/L		82	51 - 132	11	30
Endrin ketone	0.0049	U	0.0490	0.0457		ug/L		93	58 - 134	8	30
gamma-BHC (Lindane)	0.0049	U	0.0490	0.0384		ug/L		78	59 - 134	18	30
Heptachlor	0.0089	U	0.0490	0.0371		ug/L		76	54 - 130	21	30
Heptachlor epoxide	0.0049	U	0.0490	0.0408		ug/L		83	61 - 133	16	30
Methoxychlor	0.0089	U	0.0490	0.0529		ug/L		108	54 - 145	10	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*52*		*14 - 130*
Tetrachloro-m-xylene	*64*		*44 - 124*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 680-590403/33
Matrix: Water
Analysis Batch: 590403

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	0.50	U	0.50	0.50	0.20	mg/L		10/10/19 20:03	1
Sulfate	1.0	U	1.0	1.0	0.40	mg/L		10/10/19 20:03	1

Lab Sample ID: LCS 680-590403/34
Matrix: Water
Analysis Batch: 590403

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.98		mg/L		100	87 - 111
Sulfate	10.0	9.60		mg/L		96	87 - 112

Lab Sample ID: LCSD 680-590403/35
Matrix: Water
Analysis Batch: 590403

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	9.98		mg/L		100	87 - 111	0	15
Sulfate	10.0	9.63		mg/L		96	87 - 112	0	15

Lab Sample ID: 680-175052-1 MS
Matrix: WG
Analysis Batch: 590403

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	420	D	50.0	463	D 4	mg/L		92	87 - 111
Sulfate	19	D	50.0	68.2	D	mg/L		98	87 - 112

Lab Sample ID: 680-175052-1 MSD
Matrix: WG
Analysis Batch: 590403

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	420	D	50.0	464	D 4	mg/L		95	87 - 111	0	15
Sulfate	19	D	50.0	68.7	D	mg/L		99	87 - 112	1	15

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-589551/1-A
Matrix: Water
Analysis Batch: 589935

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 589551

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	3.25	J	10	5.0	1.7	ug/L		10/07/19 20:20	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		10/07/19 20:20	1
Chromium	4.0	U	10	4.0	1.6	ug/L		10/07/19 20:20	1
Copper	5.0	U	20	5.0	1.8	ug/L		10/07/19 20:20	1
Iron	50	U	50	50	17	ug/L		10/07/19 20:20	1
Lead	10	U	10	10	3.9	ug/L		10/07/19 20:20	1
Manganese	3.0	U	10	3.0	1.0	ug/L		10/07/19 20:20	1
Selenium	20	U	20	20	9.9	ug/L		10/07/19 20:20	1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: MB 680-589551/1-A
Matrix: Water
Analysis Batch: 589935

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 589551

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Silver	1.5	U	10	1.5	0.60	ug/L		10/07/19 20:20	1

Lab Sample ID: LCS 680-589551/2-A
Matrix: Water
Analysis Batch: 589935

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 589551

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	100	108		ug/L		108	88 - 113
Cadmium	50.0	54.0		ug/L		108	88 - 113
Chromium	100	106		ug/L		106	90 - 113
Copper	100	108		ug/L		108	86 - 114
Iron	5010	5290		ug/L		106	87 - 115
Lead	505	528		ug/L		105	86 - 113
Manganese	400	428		ug/L		107	90 - 114
Selenium	100	103		ug/L		103	83 - 114
Silver	50.0	52.7		ug/L		105	84 - 115

Lab Sample ID: 680-175052-1 MS
Matrix: WG
Analysis Batch: 589935

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA
Prep Batch: 589551

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	24		100	133		ug/L		109	88 - 113
Cadmium	3.0	U	50.0	54.1		ug/L		108	88 - 113
Chromium	4.0	U	100	106		ug/L		106	90 - 113
Copper	5.0	U	100	111		ug/L		111	86 - 114
Iron	50	U	5010	5290		ug/L		105	87 - 115
Lead	10	U	505	524		ug/L		104	86 - 113
Manganese	3.0	U	400	424		ug/L		106	90 - 114
Selenium	20	U J1	100	122	J1	ug/L		121	83 - 114
Silver	1.5	U	50.0	53.3		ug/L		107	84 - 115

Lab Sample ID: 680-175052-1 MSD
Matrix: WG
Analysis Batch: 589935

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA
Prep Batch: 589551

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	24		100	130		ug/L		106	88 - 113	2	20
Cadmium	3.0	U	50.0	53.1		ug/L		106	88 - 113	2	20
Chromium	4.0	U	100	104		ug/L		104	90 - 113	2	20
Copper	5.0	U	100	109		ug/L		109	86 - 114	2	20
Iron	50	U	5010	5200		ug/L		104	87 - 115	2	20
Lead	10	U	505	513		ug/L		102	86 - 113	2	20
Manganese	3.0	U	400	416		ug/L		104	90 - 114	2	20
Selenium	20	U J1	100	115		ug/L		114	83 - 114	6	20
Silver	1.5	U	50.0	52.7		ug/L		105	84 - 115	1	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-589712/1-A
Matrix: Water
Analysis Batch: 590676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 589712

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/11/19 23:03	1

Lab Sample ID: LCS 680-589712/2-A
Matrix: Water
Analysis Batch: 590676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 589712

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	105		ug/L		105	84 - 116

Lab Sample ID: 680-175052-1 MS
Matrix: WG
Analysis Batch: 590676

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA
Prep Batch: 589712

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	3.0	U	100	112		ug/L		112	84 - 116

Lab Sample ID: 680-175052-1 MSD
Matrix: WG
Analysis Batch: 590676

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA
Prep Batch: 589712

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.0	U	100	107		ug/L		107	84 - 116	5	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-589567/1-A
Matrix: Water
Analysis Batch: 589862

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 589567

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/07/19 18:17	1

Lab Sample ID: LCS 680-589567/2-A
Matrix: Water
Analysis Batch: 589862

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 589567

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.50	2.53		ug/L		101	80 - 124

Lab Sample ID: 680-175052-1 MS
Matrix: WG
Analysis Batch: 589862

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA
Prep Batch: 589567

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.20	U	1.00	0.993		ug/L		99	80 - 124

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 680-175052-1 MSD
Matrix: WG
Analysis Batch: 589862

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA
Prep Batch: 589567

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.20	U	1.00	1.00		ug/L		100	80 - 124	1	20

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 280-473668/22
Matrix: Water
Analysis Batch: 473668

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	0.050	U	0.10	0.050	0.019	mg/L		10/10/19 18:31	1

Lab Sample ID: LCS 280-473668/21
Matrix: Water
Analysis Batch: 473668

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate/Nitrite-N	5.00	5.43		mg/L		109	90 - 110

Lab Sample ID: 680-175052-1 MS
Matrix: WG
Analysis Batch: 473668

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate/Nitrite-N	0.55	J1	4.00	4.66		mg/L		103	90 - 110

Lab Sample ID: 680-175052-1 MSD
Matrix: WG
Analysis Batch: 473668

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate/Nitrite-N	0.55	J1	4.00	3.75	J1	mg/L		80	90 - 110	22	10

Method: 410.4 - COD

Lab Sample ID: MB 280-473414/5
Matrix: Water
Analysis Batch: 473414

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand	9.83	J	20	20	8.7	mg/L		10/09/19 10:30	1

Lab Sample ID: LCS 280-473414/3
Matrix: Water
Analysis Batch: 473414

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	100	99.2		mg/L		99	90 - 110

Method: 410.4 - COD (Continued)

Lab Sample ID: LCSD 280-473414/4
Matrix: Water
Analysis Batch: 473414

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand			100	104		mg/L		104	90 - 110	5	11

Lab Sample ID: 680-175052-1 MS
Matrix: WG
Analysis Batch: 473414

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	36	J1 D	100	116	J1 D	mg/L		80	90 - 110

Lab Sample ID: 680-175052-1 MSD
Matrix: WG
Analysis Batch: 473414

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	36	J1 D	100	122	D J1	mg/L		85	90 - 110	4	11

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-591019/12-A
Matrix: Water
Analysis Batch: 591133

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 591019

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		10/15/19 16:09	1

Lab Sample ID: LCS 680-591019/13-A
Matrix: Water
Analysis Batch: 591133

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 591019

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total			0.0500	0.0468		mg/L		94	83 - 116

Lab Sample ID: 680-175052-1 MS
Matrix: WG
Analysis Batch: 591133

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA
Prep Batch: 591019

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0026	J	0.0500	0.0533		mg/L		101	83 - 116

Lab Sample ID: 680-175052-1 MSD
Matrix: WG
Analysis Batch: 591133

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA
Prep Batch: 591019

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	0.0026	J	0.0500	0.0523		mg/L		99	83 - 116	2	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-473370/31
Matrix: Water
Analysis Batch: 473370

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	10	U	10	10	3.1	mg/L		10/08/19 20:37	1

Lab Sample ID: LCS 280-473370/30
Matrix: Water
Analysis Batch: 473370

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			200	204		mg/L		102	89 - 109		

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-473403/1
Matrix: Water
Analysis Batch: 473403

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	10	U	10	10	4.7	mg/L		10/09/19 10:10	1

Lab Sample ID: LCS 280-473403/2
Matrix: Water
Analysis Batch: 473403

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			500	503		mg/L		101	93 - 110		

Lab Sample ID: LCSD 280-473403/3
Matrix: Water
Analysis Batch: 473403

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)			500	519		mg/L		104	93 - 110	3	20

Lab Sample ID: 680-175052-1 DU
Matrix: WG
Analysis Batch: 473403

Client Sample ID: LFM-99-02B_FAL19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	850			812		mg/L				4	10

GC Semi VOA

Prep Batch: 589860

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	3520C	
MB 680-589860/19-A	Method Blank	Total/NA	Water	3520C	
LCS 680-589860/20-A	Lab Control Sample	Total/NA	Water	3520C	
LCS 680-589860/25-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-589860/26-A	Lab Control Sample Dup	Total/NA	Water	3520C	
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	3520C	
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	3520C	

Analysis Batch: 591047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	8081B 8082A	589860
MB 680-589860/19-A	Method Blank	Total/NA	Water	8081B 8082A	589860
LCS 680-589860/20-A	Lab Control Sample	Total/NA	Water	8081B 8082A	589860
LCS 680-589860/25-A	Lab Control Sample	Total/NA	Water	8081B 8082A	589860
LCSD 680-589860/26-A	Lab Control Sample Dup	Total/NA	Water	8081B 8082A	589860
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	8081B 8082A	589860
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	8081B 8082A	589860

HPLC/IC

Analysis Batch: 590403

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	9056A	
MB 680-590403/33	Method Blank	Total/NA	Water	9056A	
LCS 680-590403/34	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-590403/35	Lab Control Sample Dup	Total/NA	Water	9056A	
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	9056A	
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	9056A	

Metals

Prep Batch: 589551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	3010A	
MB 680-589551/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-589551/2-A	Lab Control Sample	Total/NA	Water	3010A	
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	3010A	
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	3010A	

Prep Batch: 589567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	7470A	
MB 680-589567/1-A	Method Blank	Total/NA	Water	7470A	
LCS 680-589567/2-A	Lab Control Sample	Total/NA	Water	7470A	
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	7470A	
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	7470A	

Prep Batch: 589712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	3010A	
MB 680-589712/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-589712/2-A	Lab Control Sample	Total/NA	Water	3010A	

Metals (Continued)

Prep Batch: 589712 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	3010A	
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	3010A	

Analysis Batch: 589862

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	7470A	589567
MB 680-589567/1-A	Method Blank	Total/NA	Water	7470A	589567
LCS 680-589567/2-A	Lab Control Sample	Total/NA	Water	7470A	589567
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	7470A	589567
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	7470A	589567

Analysis Batch: 589935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	6010C	589551
MB 680-589551/1-A	Method Blank	Total/NA	Water	6010C	589551
LCS 680-589551/2-A	Lab Control Sample	Total/NA	Water	6010C	589551
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	6010C	589551
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	6010C	589551

Analysis Batch: 590676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	6020A	589712
MB 680-589712/1-A	Method Blank	Total/NA	Water	6020A	589712
LCS 680-589712/2-A	Lab Control Sample	Total/NA	Water	6020A	589712
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	6020A	589712
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	6020A	589712

General Chemistry

Analysis Batch: 473370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	SM 2320B	
MB 280-473370/31	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-473370/30	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 473403

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	SM 2540C	
MB 280-473403/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-473403/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-473403/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	
680-175052-1 DU	LFM-99-02B_FAL19	Total/NA	WG	SM 2540C	

Analysis Batch: 473414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	410.4	
MB 280-473414/5	Method Blank	Total/NA	Water	410.4	
LCS 280-473414/3	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-473414/4	Lab Control Sample Dup	Total/NA	Water	410.4	
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	410.4	
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	410.4	

QC Association Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Fall 2019

Job ID: 680-175052-1

General Chemistry

Analysis Batch: 473668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	353.2	
MB 280-473668/22	Method Blank	Total/NA	Water	353.2	
LCS 280-473668/21	Lab Control Sample	Total/NA	Water	353.2	
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	353.2	
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	353.2	

Prep Batch: 591019

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	9012B	
MB 680-591019/12-A	Method Blank	Total/NA	Water	9012B	
LCS 680-591019/13-A	Lab Control Sample	Total/NA	Water	9012B	
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	9012B	
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	9012B	

Analysis Batch: 591133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175052-1	LFM-99-02B_FAL19	Total/NA	WG	9012B	591019
MB 680-591019/12-A	Method Blank	Total/NA	Water	9012B	591019
LCS 680-591019/13-A	Lab Control Sample	Total/NA	Water	9012B	591019
680-175052-1 MS	LFM-99-02B_FAL19	Total/NA	WG	9012B	591019
680-175052-1 MSD	LFM-99-02B_FAL19	Total/NA	WG	9012B	591019

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Fall 2019

Job ID: 680-175052-1

Client Sample ID: LFM-99-02B_FAL19

Date Collected: 10/04/19 11:35
Date Received: 10/05/19 09:25

Lab Sample ID: 680-175052-1

Matrix: WG

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1010.9 mL	5 mL	589860	10/08/19 14:00	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			591047	10/15/19 21:17	JCK	TAL SAV
	Instrument ID: CSGZ									
Total/NA	Analysis	9056A		5	5 mL	5 mL	590403	10/10/19 20:41	EKB	TAL SAV
	Instrument ID: CICK									
Total/NA	Prep	3010A			50 mL	50 mL	589551	10/06/19 16:21	PG	TAL SAV
Total/NA	Analysis	6010C		1			589935	10/07/19 21:02	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	589712	10/06/19 16:21	AJR	TAL SAV
Total/NA	Analysis	6020A		1			590676	10/11/19 23:11	BWR	TAL SAV
	Instrument ID: ICPMSC									
Total/NA	Prep	7470A			50 mL	50 mL	589567	10/06/19 19:23	DB	TAL SAV
Total/NA	Analysis	7470A		1			589862	10/07/19 18:49	DB	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	473668	10/10/19 18:33	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		2	2 mL	2 mL	473414	10/09/19 10:30	SGB	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	591019	10/15/19 10:54	JER	TAL SAV
Total/NA	Analysis	9012B		1	6 mL	6 mL	591133	10/15/19 16:23	JER	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			473370	10/08/19 22:40	SPG	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	473403	10/09/19 10:10	FRG	TAL DEN
	Instrument ID: NOEQUIP									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: Fort Devens RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
TM0500-1

Matrices: ✓ Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B ✓	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No NA Yes No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	(Yes) No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 11/01/19

TEST AMERICA SAVANNAH
DEVNS-LTM
TM0500

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
DEVNS-LTM
TM0500

Sample Receipt

The following samples were received on October 05, 2019 and were logged in under Katahdin Analytical Services work order number TM0500 for a hardcopy due date of October 26, 2019.

KATAHDIN	TEST AMERICA SAVANNAH
Sample No.	Sample Identification
TM0500-1	LFM-99-02B_FAL19

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of work order TM0500 were analyzed in accordance with Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, and/or Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

Sample TM0500-1 was used as the Matrix Spike (MS) and Matrix Spike Duplicate (MSD) as requested by the client.

MA-VPH Analysis

The target analyte naphthalene was detected below ½ the LOQ in the method blank WG264149-1 According to the DoD QSM, a method blank is considered to be contaminated if the concentration of any target analyte in the blank exceeds ½ the reporting limit and is greater than 1/10 the amount measured in any sample, or 1/10 the regulatory limit (whichever is greater). Since the method blank was acceptable, no further action was taken.

The opening calibration verification standard (CV) (file 2MJ10099) had a low response for the surrogate 2,5-dibromotoluene on the PID that resulted in a %D that exceeded the method acceptance limits of ± 25%. Since the target analyte and range responses were acceptable, no further action was taken.

MA-EPH Analysis

All of the closing continuing calibration standards met the method allowance of four or less compounds that exhibited percent differences greater than 25% but less than 40%.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond
11.01.19
Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC

Sample Receipt Condition Report

Client: Test America	KAS PM: [illegible]	Sampled By: Client
Project:	KIMS Entry By: JCB	Delivered By: Fed Ex
KAS Work Order#: TM0469, TM0499, TM0[illegible]	KIMS Review By: [illegible]	Received By: G. Brewer
SDG #:	Cooler: 1A of 5	Date/Time Rec.: 10/05/19 12:25

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?		✓			
3. Chain of Custody signed by client?				✓	
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 1.1 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?			X		2 of 6 VH vials arrived broken for MSD sample XGM-94-04X
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on: 4/12/19					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Test America	KAS PM: [illegible]	Sampled By: Client	
Project:	KIMS Entry By: JCB	Delivered By: Fed Ex	
KAS Work Order#: TM0469, TM0499, TM0500	KIMS Review By: [illegible]	Received By: G. Brewer	
SDG #:	Cooler: 2B of 5	Date/Time Rec.: 10/05/19 12:25	

[illegible] 10-7-19

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 0.7 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?				✓	
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

QA-048 – Revision 7 – 09/26/2018

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Test America	KAS PM: [illegible]	Sampled By: Client	
Project:	KIMS Entry By: [illegible]	Delivered By: Fed Ex	
KAS Work Order#: TM0469 TM0499 TM0500	KIMS Review By: [illegible]	Received By: G. Brewer	
SDG #:	Cooler: 3/4 of 5 X3 [illegible]	Date/Time Rec.: 10/05/19 12:25	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?		✓			
3. Chain of Custody signed by client?				✓	
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): 1.9 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?	✓				
Soil/Sediment:					
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11 Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

QA-048 – Revision 7 – 09/26/2018

360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

TM0500

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # DCL_FAL19

360325-Boston

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, DCL Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number, insert	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:
ON ICE
N; = Native
WG Ground water

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2 x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6°C
4	2 x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6°C

Event: KOMAN, Long Term Monitoring, DCL Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: MADEPEP - EPH with PAHs	Analytical Test Method: MADEPVP - VPH with targets	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
						2	4						
1	~~LFM-03-07_FALL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-03-07~~	N1	10.90	~~20.90~~		1
2	~~LFM-99-02B_FALL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-99-02B~~	~~N1~~	~~14.80~~	~~25.83~~		1
3	~~LFM-89-05A_FALL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-89-05A~~	~~N1~~	19.90	~~29.90~~		1
4	~~LFMDUP01_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-89-05A~~	~~DUP~~	19.90	29.90		1
5	~~LFM-89-06ARP_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-89-06ARP~~	~~N1~~	~~18.09~~	~~28.09~~		1
6	LFM-99-02B_Fall19	WG	10/4/19	1135	MS	6	9	LFM-99-02B	N;	14.50	25.83		
7													
8													
9													
10													
		Turnaround Time: 21 Days											

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
	10/4/19	1421		10/4/19	1421
	10/4/19	1500		10-4-19	150
	10-4-19				
				10/05/19	1225

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

Katahdin ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Nov. 01, 2019
11:16 AM

Login Number: TM0500

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Quote/Incoming:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.1 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative. VPH undetect ethylbenzene, see work order SL3114.
CHECK NO.		
CLIENT PO#		PO# 3056392
CLIENT PROJECT MANAGE	:	
CONTRACT	:	
COOLER TEMPERATURE	:	1.1, 0.7, 1.9
DELIVERY SERVICES	:	FedEx
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS	:	JCB
PM	:	HHM
PROJECT NAME	:	DEVNS-LTM
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF, EDD and invoice to Jerry. No HC.

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0500-1	LFM-99-02B_FAL19	04-OCT-19 11:35	05-OCT-19	:		24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	18-OCT-19	1L N-Amber Glass		**MS/MSD**
Aqueous	S	MA-VPH	18-OCT-19	40mL Vial+HCl		

TM0500-2	MS CHARGE	04-OCT-19 11:35	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	18-OCT-19	1L N-Amber Glass		**not a sample, MS charge**
Aqueous	S	MA-VPH	18-OCT-19	40mL Vial+HCl		

TM0500-3	MSD CHARGE	04-OCT-19 11:35	05-OCT-19			24-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	18-OCT-19	1L N-Amber Glass		**not a sample, MS charge**
Aqueous	S	MA-VPH	18-OCT-19	40mL Vial+HCl		

Total Samples: **3** ***Total Analyses:*** **6**

11-1-19

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0500-1
Client ID: LFM-99-02B_FAL19
Project: DEVNS-LTM
SDG: TM0500
Lab File ID: CMJ2086.D

Sample Date: 04-OCT-19
Received Date: 05-OCT-19
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730

Analysis Date: 12-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	98	ug/L	1	100	98.	49.	74.
C19-C36 Aliphatics	U	98	ug/L	1	100	98.	49.	74.
C11-C22 Aromatics	U	98	ug/L	1	100	98.	49.	74.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.88	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.98	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		44.6	%					
o-Terphenyl		84.5	%					
2-Fluorobiphenyl		74.6	%					
2-Bromonaphthalene		65.2	%					

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http://www.katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG263730-1
Client ID: Method Blank Sample
Project:
SDG: TM0500
Lab File ID: CMJ2067.D

Sample Date:
Received Date:
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730

Analysis Date: 11-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 18-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		40.4	%					
o-Terphenyl		91.6	%					
2-Fluorobiphenyl		75.2	%					
2-Bromonaphthalene		68.2	%					

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http://www.katahdinlab.com

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** DEVNS-LTM **Matrix:** AQ
Lab Code: KAS **SDG:** TM0500

Client Sample ID	Lab Sample ID	Col. ID	2BN #	2FBP #	5AA #	OTP #
LFM-99-02B-FAL19	TM0500-1	B	65.2	74.6	44.6	84.5
Method Blank Sample	WG263730-1	B	68.2	75.2	40.4	91.6
Laboratory Control S	WG263730-2RA	B	87.4	88.2	47.0	89.2
Laboratory Control S	WG263730-3	B	87.2	88.0	54.2	94.2
Matrix Spike	WG263730-6RA	B	79.9	80.9	55.1	82.0
Matrix Spike Duplica	WG263730-7RA	B	91.8	92.0	64.8	97.7

		QC Limits
5AA	5-ALPHA ANDROSTANE	40-140
OTP	O-TERPHENYL	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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http://katahdinlab.com
sales@katahdinlab.com

Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG263730-2RA
LCSD ID: WG263730-3
Project:
SDG: TM0500
Report Date: 18-OCT-19
LCS File ID: CMJ2189.D

Received Date:
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730
LCSD File ID: CMJ2069.d

Analysis Date: 16-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	1400	91.5	1570	103.	ug/L	11	25	40-140
C9-C18 Aliphatics	540.	336.	62.2	307.	56.8	ug/L	9	25	40-140
C19-C36 Aliphatics	720.	667.	92.6	544.	75.6	ug/L	20	25	40-140
Naphthalene	90.0	70.5	78.3	69.5	77.2	ug/L	1	25	40-140
2-Methylnaphthalene	90.0	73.7	81.9	74.1	82.3	ug/L	0	25	40-140
Phenanthrene	90.0	82.8	92.0	83.8	93.1	ug/L	1	25	40-140
Acenaphthylene	90.0	73.4	81.6	74.5	82.8	ug/L	1	25	40-140
Acenaphthene	90.0	76.1	84.6	76.3	84.8	ug/L	0	25	40-140
Anthracene	90.0	80.5	89.4	81.8	90.9	ug/L	2	25	40-140
Benzo(a)anthracene	90.0	83.0	92.2	83.6	92.9	ug/L	1	25	40-140
Benzo(a)pyrene	90.0	80.1	89.0	83.9	93.2	ug/L	5	25	40-140
Benzo(b)fluoranthene	90.0	90.7	101.	88.0	97.8	ug/L	3	25	40-140
Benzo(g,h,i)perylene	90.0	89.5	99.4	92.0	102.	ug/L	3	25	40-140
Benzo(k)fluoranthene	90.0	82.6	91.8	87.3	97.0	ug/L	6	25	40-140
Chrysene	90.0	86.4	96.0	87.4	97.1	ug/L	1	25	40-140
Dibenzo(a,h)anthracene	90.0	79.5	88.3	84.0	93.3	ug/L	6	25	40-140
Fluoranthene	90.0	85.7	95.2	86.2	95.8	ug/L	0	25	40-140
Fluorene	90.0	76.9	85.4	78.2	86.9	ug/L	2	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	83.5	92.8	86.2	95.8	ug/L	3	25	40-140
Pyrene	90.0	84.8	94.2	85.2	94.7	ug/L	0	25	40-140
5-Alpha Androstane			47.0		54.2				40-140
o-Terphenyl			89.2		94.2				40-140
2-Fluorobiphenyl			88.2		88.0				40-140
2-Bromonaphthalene			87.4		87.2				40-140

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ANALYTICAL SERVICES

MS/MSD Recovery Report

MS ID: WG263730-6RA
MSD ID: WG263730-7RA
Sample ID: TM0500-1
Client ID: LFM-99-02B_FAL19
Project:
SDG: TM0500
MS File ID: CMJ2192.D

Received Date:
Extract Date: 09-OCT-19
Extracted By: LR
Extraction Method: SW846 3510C
Lab Prep Batch: WG263730
Report Date: 01-NOV-19
MSD File ID: CMJ2193.d

Analysis Date: 17-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1480	1530	ug/L	U98	1220	1490	82.1	97.4	20	25	40-140
C9-C18 Aliphatics	524.	540.	ug/L	U98	269	364	51.3	67.4	30*	25	40-140
C19-C36 Aliphatics	699.	720.	ug/L	U98	592	657	84.7	91.2	10	25	40-140
Naphthalene	87.4	90.0	ug/L	U2.0	57.6	72.9	65.9	81.0	23	25	40-140
2-Methylnaphthalene	87.4	90.0	ug/L	U2.0	60.3	76.8	69.0	85.3	24	25	40-140
Phenanthrene	87.4	90.0	ug/L	U2.0	71	88.2	81.2	98.0	22	25	40-140
Acenaphthylene	87.4	90.0	ug/L	U2.0	60.7	77.5	69.5	86.1	24	25	40-140
Acenaphthene	87.4	90.0	ug/L	U2.0	63	80.5	72.1	89.4	24	25	40-140
Anthracene	87.4	90.0	ug/L	U2.0	69.9	85.4	80.0	94.9	20	25	40-140
Benzo(a)anthracene	87.4	90.0	ug/L	U2.0	73.6	88.4	84.2	98.2	18	25	40-140
Benzo(a)pyrene	87.4	90.0	ug/L	U2.0	72	86.6	82.4	96.2	18	25	40-140
Benzo(b)fluoranthene	87.4	90.0	ug/L	U2.0	79.5	93.1	91.0	103.	16	25	40-140
Benzo(g,h,i)perylene	87.4	90.0	ug/L	U2.0	81.2	96.8	92.9	108.	18	25	40-140
Benzo(k)fluoranthene	87.4	90.0	ug/L	U2.0	75.2	92.7	86.1	103.	21	25	40-140
Chrysene	87.4	90.0	ug/L	U2.0	76.6	90.3	87.7	100.	16	25	40-140
Dibenzo(a,h)anthracene	87.4	90.0	ug/L	U2.0	77.6	87.6	88.8	97.3	12	25	40-140
Fluoranthene	87.4	90.0	ug/L	U2.0	75.4	91.5	86.3	102.	19	25	40-140
Fluorene	87.4	90.0	ug/L	U2.0	64.6	81.2	73.9	90.2	23	25	40-140
Indeno(1,2,3-cd)pyrene	87.4	90.0	ug/L	U2.0	76.7	88.7	87.8	98.6	14	25	40-140
Pyrene	87.4	90.0	ug/L	U2.0	74.5	90.6	85.3	101.	20	25	40-140
5-Alpha Androstane							55.1	64.8			40-140
o-Terphenyl							82.0	97.7			40-140
2-Fluorobiphenyl							80.9	92.0			40-140
2-Bromonaphthalene							79.9	91.8			40-140

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : CMJ1067.D
Instrument ID : GC12

SDG : TM0500
Lab Sample ID : WG263730-1
Date Analyzed : 11-OCT-19
Time Analyzed : 11:11
Date Extracted : 09-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG263730-3	CMJ1069.D	10/11/19	12:42
LFM-99-02B-FAL19	TM0500-1	CMJ1086.D	10/12/19	01:35
Laboratory Control S	WG263730-2RA	CMJ1189.D	10/16/19	23:47
Matrix Spike	WG263730-6RA	CMJ1192.D	10/17/19	02:05
Matrix Spike Duplica	WG263730-7RA	CMJ1193.D	10/17/19	02:51

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : CMJ1067A.D
Instrument ID : GC12

SDG : TM0500
Lab Sample ID : WG263730-1
Date Analyzed : 11-OCT-19
Time Analyzed : 11:11
Date Extracted : 09-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG263730-3	CMJ1069A	10/11/19	12:42
LFM-99-02B-FAL19	TM0500-1	CMJ1086A	10/12/19	01:35
Laboratory Control S	WG263730-2RA	CMJ1189A	10/16/19	23:47
Matrix Spike	WG263730-6RA	CMJ1192A	10/17/19	02:05
Matrix Spike Duplica	WG263730-7RA	CMJ1193A	10/17/19	02:51

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : CMJ2067.D
Instrument ID : GC12

SDG : TM0500
Lab Sample ID : WG263730-1
Date Analyzed : 11-OCT-19
Time Analyzed : 11:11
Date Extracted : 09-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG263730-3	CMJ2069.D	10/11/19	12:42
LFM-99-02B-FAL19	TM0500-1	CMJ2086.D	10/12/19	01:35
Laboratory Control S	WG263730-2RA	CMJ2189.D	10/16/19	23:47
Matrix Spike	WG263730-6RA	CMJ2192.D	10/17/19	02:05
Matrix Spike Duplica	WG263730-7RA	CMJ2193.D	10/17/19	02:51

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0500
Project : DEVNS-LTM **Instrument ID:** GC12
Lab File IDs : CMF1044.d CMF1043.d CMF1038.d CMF1037.d CMF1036.d **Calibration Date(s):** 13-JUN-19 14:19 14-JUN-19 11:54

	1.0000 Level 1	10.0000 Level 2	50.0000 Level 3	100.0000 Level 4	200.0000 Level 5		New Crv	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	10121	7691	7743	9542	10604		AVG		9140		14.7979	25.00000	M (
Naphthalene	10354	7818	7777	9552	10639		AVG		9228		14.7982	25.00000	O
2-Methylnaphthalene	10324	7724	7714	9542	10565		AVG		9173		15.0537	25.00000	O
Acenaphthylene	10068	7691	7723	9503	10607		AVG		9118		14.7633	25.00000	O
Acenaphthene	10199	7794	7858	9655	10780		AVG		9257		14.7562	25.00000	O
Fluorene	11209	7667	7690	9510	10542		AVG		9324		17.3677	25.00000	O
Phenanthrene	9881	7557	7635	9364	10490		AVG		8985		14.7998	25.00000	O
Anthracene	9921	7600	7663	9415	10563		AVG		9032		14.8586	25.00000	O
Fluoranthene	10212	7709	7726	9516	10645		AVG		9162		15.0473	25.00000	O
Pyrene	10446	7822	7859	9642	10786		AVG		9311		15.0931	25.00000	O
Benzo(a)Anthracene	10020	7658	7751	9512	10649		AVG		9118		14.8290	25.00000	O
Chrysene	10099	7686	7703	9443	10552		AVG		9097		14.7233	25.00000	O
Benzo(b)Fluoranthene	10946	8177	8753	10286	12160		AVG		10065		16.0967	25.00000	O
Benzo(k)Fluoranthene	9124	7366	6922	9041	9475		AVG		8386		13.7813	25.00000	O
Benzo(a)Pyrene	9883	7589	7636	9393	10520		AVG		9004		14.7936	25.00000	O
Indeno(1,2,3-cd)Pyrene	9859	8028	8262	10120	12414		AVG		9737		18.0983	25.00000	O
Dibenzo(a,h)Anthracene	10148	7614	7628	9663	8777		AVG		8766		13.1794	25.00000	O
Benzo(g,h,i)Perylene	9366	7247	7334	9057	10098		AVG		8620		14.7563	25.00000	O
2-Fluorobiphenyl	10513	7092	7065	8744	9779		AVG		8639		18.0206	25.00000	
2-Bromonaphthalene	7500	4848	4895	5995	6697		AVG		5987		19.1971	25.00000	
O-Terphenyl	10808	7564	7547	9330	10378		AVG		9125		16.7732	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0500
Project : DEVNS-LTM **Instrument ID:** GC12
Lab File IDs : CMF2044.d CMF2043.d CMF2038.d CMF2037.d CMF2036.d **Calibration Date(s):** 13-JUN-19 14:19 14-JUN-19 11:54

	1.0000 Level 1	10.0000 Level 2	50.0000 Level 3	100.0000 Level 4	200.0000 Level 5		New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C18 Aliphatic	8647	6935	6914	8335	8081		AVG		7782		10.3892	25.00000	M
C19-C36 Aliphatic	8474	6865	6928	8365	8100		AVG		7747		10.1706	25.00000	S O
C-9	8436	7020	6946	8385	8119		AVG		7781		9.50010	30.00000	O
C-10	8433	6977	6965	8422	8123		AVG		7784		9.66881	25.00000	O
C-12	8800	7031	6992	8427	8171		AVG		7884		10.4974	25.00000	O
C-14	8699	6875	6894	8278	8060		AVG		7761		10.7283	25.00000	O
C-16	8953	6985	6907	8366	8079		AVG		7858		11.3353	25.00000	O
C-18	8558	6724	6778	8136	7932		AVG		7625		10.8818	25.00000	O
C-19	9013	6965	6985	8461	8197		AVG		7924		11.5491	25.00000	O
C-20	8454	6889	6895	8356	8109		AVG		7741		10.1361	25.00000	O
C-22	8594	6925	6923	8362	8115		AVG		7784		10.3169	25.00000	O
C-24	8825	6932	6934	8355	8123		AVG		7834		10.9841	25.00000	O
C-26	8326	6886	6894	8315	8067		AVG		7697		9.67415	25.00000	O
C-28	8380	6907	6993	8425	8159		AVG		7773		9.75473	25.00000	O
C-30	8618	6924	6970	8421	8148		AVG		7816		10.3773	25.00000	O
C-36	7583	6496	6832	8223	7884		AVG		7404		9.75558	25.00000	O
5-alpha androstane	10008	7872	7740	9406	9123		AVG		8830		11.1987	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-1
Lab File ID : CMJ1066.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0500
Analytical Date: 10/11/19 09:27
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	8937	0.010	-3.15288	25.00000	Averaged
60	2-Methylnaphthalene	9173	8855	0.010	-3.46780	25.00000	Averaged
70	Phenanthrene	8985	8753	0.010	-2.58166	25.00000	Averaged
80	Acenaphthylene	9118	8930	0.010	-2.06204	25.00000	Averaged
90	Acenaphthene	9257	8998	0.010	-2.80413	25.00000	Averaged
100	Anthracene	9032	8663	0.010	-4.08375	25.00000	Averaged
110	Benzo(a)Anthracene	9118	8779	0.010	-3.71398	25.00000	Averaged
120	Benzo(a)Pyrene	9004	8824	0.010	-2.00458	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	9069	0.010	-9.89429	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	8472	0.010	-1.71979	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	9010	0.010	7.44633	25.00000	Averaged
160	Chrysene	9097	8833	0.010	-2.89820	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	7904	0.010	-9.83671	25.00000	Averaged
180	Fluoranthene	9162	8935	0.010	-2.46872	25.00000	Averaged
190	Fluorene	9324	8844	0.010	-5.14057	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	9703	0.010	-0.34531	25.00000	Averaged
210	Pyrene	9311	9115	0.010	-2.10420	25.00000	Averaged
4	2-Fluorobiphenyl	8639	8573	0.010	-0.75826	25.00000	Averaged
6	2-Bromonaphthalene	5987	5786	0.010	-3.35745	25.00000	Averaged
11	O-Terphenyl	9125	8865	0.010	-2.85640	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-2
Lab File ID : CMJ1089.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0500
Analytical Date: 10/12/19 06:56
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	9058	0.010	-1.84079	25.00000	Averaged
60	2-Methylnaphthalene	9173	8921	0.010	-2.74811	25.00000	Averaged
70	Phenanthrene	8985	8811	0.010	-1.93615	25.00000	Averaged
80	Acenaphthylene	9118	9016	0.010	-1.12789	25.00000	Averaged
90	Acenaphthene	9257	9121	0.010	-1.46829	25.00000	Averaged
100	Anthracene	9032	8680	0.010	-3.89885	25.00000	Averaged
110	Benzo(a)Anthracene	9118	8813	0.010	-3.34284	25.00000	Averaged
120	Benzo(a)Pyrene	9004	8892	0.010	-1.24939	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	10168	0.010	1.02346	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	8559	0.010	-0.71681	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	8041	0.010	-4.10769	25.00000	Averaged
160	Chrysene	9097	8866	0.010	-2.53301	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	8174	0.010	-6.74927	25.00000	Averaged
180	Fluoranthene	9162	8975	0.010	-2.04041	25.00000	Averaged
190	Fluorene	9324	8955	0.010	-3.95456	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	9541	0.010	-2.01015	25.00000	Averaged
210	Pyrene	9311	9129	0.010	-1.95879	25.00000	Averaged
4	2-Fluorobiphenyl	8639	8699	0.010	0.69743	25.00000	Averaged
6	2-Bromonaphthalene	5987	5879	0.010	-1.79989	25.00000	Averaged
11	O-Terphenyl	9125	8979	0.010	-1.60218	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-5
Lab File ID : CMJ1177.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0500
Analytical Date: 10/16/19 13:37
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	9931	0.010	7.61800	25.00000	Averaged
60	2-Methylnaphthalene	9173	9885	0.010	7.75439	25.00000	Averaged
70	Phenanthrene	8985	9845	0.010	9.56704	25.00000	Averaged
80	Acenaphthylene	9118	9995	0.010	9.61195	25.00000	Averaged
90	Acenaphthene	9257	10135	0.010	9.47958	25.00000	Averaged
100	Anthracene	9032	9533	0.010	5.55026	25.00000	Averaged
110	Benzo(a)Anthracene	9118	9732	0.010	6.73266	25.00000	Averaged
120	Benzo(a)Pyrene	9004	9459	0.010	5.04963	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	10271	0.010	2.05599	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	8643	0.010	0.26365	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	9041	0.010	7.81528	25.00000	Averaged
160	Chrysene	9097	9773	0.010	7.43084	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	8726	0.010	-0.45599	25.00000	Averaged
180	Fluoranthene	9162	9981	0.010	8.94272	25.00000	Averaged
190	Fluorene	9324	9847	0.010	5.61378	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	10201	0.010	4.76381	25.00000	Averaged
210	Pyrene	9311	10188	0.010	9.41766	25.00000	Averaged
4	2-Fluorobiphenyl	8639	9615	0.010	11.30105	25.00000	Averaged
6	2-Bromonaphthalene	5987	6535	0.010	9.15402	25.00000	Averaged
11	O-Terphenyl	9125	10080	0.010	10.46549	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-6
Lab File ID : CMJ1205.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0500
Analytical Date: 10/17/19 12:57
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	10061	0.010	9.02588	25.00000	Averaged
60	2-Methylnaphthalene	9173	10066	0.010	9.72617	25.00000	Averaged
70	Phenanthrene	8985	9995	0.010	11.24180	25.00000	Averaged
80	Acenaphthylene	9118	10094	0.010	10.70206	25.00000	Averaged
90	Acenaphthene	9257	10221	0.010	10.41550	25.00000	Averaged
100	Anthracene	9032	9643	0.010	6.75861	25.00000	Averaged
110	Benzo(a)Anthracene	9118	9880	0.010	8.35561	25.00000	Averaged
120	Benzo(a)Pyrene	9004	9942	0.010	10.40999	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	10673	0.010	6.04286	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	9480	0.010	9.96648	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	9852	0.010	17.48160	25.00000	Averaged
160	Chrysene	9097	9892	0.010	8.74473	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	8516	0.010	-2.85598	25.00000	Averaged
180	Fluoranthene	9162	10188	0.010	11.20937	25.00000	Averaged
190	Fluorene	9324	10002	0.010	7.27278	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	10472	0.010	7.55613	25.00000	Averaged
210	Pyrene	9311	10369	0.010	11.35984	25.00000	Averaged
4	2-Fluorobiphenyl	8639	9799	0.010	13.43741	25.00000	Averaged
6	2-Bromonaphthalene	5987	6576	0.010	9.84720	25.00000	Averaged
11	O-Terphenyl	9125	10191	0.010	11.68300	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-3
Lab File ID : CMJ2066.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0500
Analytical Date: 10/11/19 09:27
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	7972	0.010	2.43922	25.00000	Averaged
30	C19-C36 Aliphatic	7747	8076	0.010	4.25199	25.00000	Averaged
370	C-9	7781	7950	0.010	2.17438	30.00000	Averaged
380	C-10	7784	8021	0.010	3.04016	25.00000	Averaged
390	C-12	7884	8016	0.010	1.67479	25.00000	Averaged
400	C-14	7761	7934	0.010	2.23396	25.00000	Averaged
410	C-16	7858	8042	0.010	2.34473	25.00000	Averaged
420	C-18	7625	7869	0.010	3.19754	25.00000	Averaged
430	C-19	7924	8089	0.010	2.08080	25.00000	Averaged
440	C-20	7741	8037	0.010	3.83177	25.00000	Averaged
450	C-22	7784	8023	0.010	3.07367	25.00000	Averaged
460	C-24	7834	8090	0.010	3.27586	25.00000	Averaged
470	C-26	7697	8068	0.010	4.81699	25.00000	Averaged
480	C-28	7773	8088	0.010	4.05665	25.00000	Averaged
490	C-30	7816	8129	0.010	4.00777	25.00000	Averaged
500	C-36	7404	8082	0.010	9.16509	25.00000	Averaged
44	5-alpha androstane	8830	8056	0.010	-8.76342	25.00000	Averaged

*** = Compound out of QC criteria**

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-4
Lab File ID : CMJ2089.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0500
Analytical Date: 10/12/19 06:56
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	8080	0.010	3.82600	25.00000	Averaged
30	C19-C36 Aliphatic	7747	8238	0.010	6.34717	25.00000	Averaged
370	C-9	7781	8044	0.010	3.37988	30.00000	Averaged
380	C-10	7784	8129	0.010	4.43043	25.00000	Averaged
390	C-12	7884	8152	0.010	3.39805	25.00000	Averaged
400	C-14	7761	8063	0.010	3.88527	25.00000	Averaged
410	C-16	7858	8137	0.010	3.55625	25.00000	Averaged
420	C-18	7625	7956	0.010	4.32928	25.00000	Averaged
430	C-19	7924	8275	0.010	4.42824	25.00000	Averaged
440	C-20	7741	8147	0.010	5.24563	25.00000	Averaged
450	C-22	7784	8221	0.010	5.61462	25.00000	Averaged
460	C-24	7834	8259	0.010	5.43089	25.00000	Averaged
470	C-26	7697	8183	0.010	6.31100	25.00000	Averaged
480	C-28	7773	8278	0.010	6.49769	25.00000	Averaged
490	C-30	7816	8263	0.010	5.71882	25.00000	Averaged
500	C-36	7404	8280	0.010	11.83787	25.00000	Averaged
44	5-alpha androstane	8830	8110	0.010	-8.15015	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-7
Lab File ID : CMJ2177.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0500
Analytical Date: 10/16/19 13:37
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	8736	0.010	12.25950	25.00000	Averaged
30	C19-C36 Aliphatic	7747	8983	0.010	15.95733	25.00000	Averaged
370	C-9	7781	8653	0.010	11.20611	30.00000	Averaged
380	C-10	7784	8766	0.010	12.61998	25.00000	Averaged
390	C-12	7884	8766	0.010	11.18607	25.00000	Averaged
400	C-14	7761	8749	0.010	12.72732	25.00000	Averaged
410	C-16	7858	8813	0.010	12.15095	25.00000	Averaged
420	C-18	7625	8672	0.010	13.71783	25.00000	Averaged
430	C-19	7924	9007	0.010	13.66403	25.00000	Averaged
440	C-20	7741	8860	0.010	14.45816	25.00000	Averaged
450	C-22	7784	9055	0.010	16.33729	25.00000	Averaged
460	C-24	7834	8917	0.010	13.82635	25.00000	Averaged
470	C-26	7697	8924	0.010	15.93683	25.00000	Averaged
480	C-28	7773	8988	0.010	15.63351	25.00000	Averaged
490	C-30	7816	9087	0.010	16.25537	25.00000	Averaged
500	C-36	7404	9024	0.010	21.88414	25.00000	Averaged
44	5-alpha androstane	8830	8853	0.010	0.26527	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG263959-8
Lab File ID : CMJ2205.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0500
Analytical Date: 10/17/19 12:57
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
20	C9-C18 Aliphatic	7782	9160	0.010	17.70090	25.00000	Averaged	
30	C19-C36 Aliphatic	7747	9387	0.010	21.17976	25.00000	Averaged	
370	C-9	7781	9007	0.010	15.76182	30.00000	Averaged	
380	C-10	7784	9215	0.010	18.37686	25.00000	Averaged	
390	C-12	7884	9218	0.010	16.92359	25.00000	Averaged	
400	C-14	7761	9172	0.010	18.17990	25.00000	Averaged	
410	C-16	7858	9258	0.010	17.81991	25.00000	Averaged	
420	C-18	7625	9089	0.010	19.18977	25.00000	Averaged	
430	C-19	7924	9412	0.010	18.77534	25.00000	Averaged	
440	C-20	7741	9301	0.010	20.16526	25.00000	Averaged	
450	C-22	7784	9366	0.010	20.32897	25.00000	Averaged	
460	C-24	7834	9377	0.010	19.70272	25.00000	Averaged	
470	C-26	7697	9327	0.010	21.16871	25.00000	Averaged	
480	C-28	7773	9460	0.010	21.70793	25.00000	Averaged	
490	C-30	7816	9531	0.010	21.93970	25.00000	Averaged	
500	C-36	7404	9323	0.010	25.93032	25.00000	Averaged	<-
44	5-alpha androstane	8830	9418	0.010	6.66248	25.00000	Averaged	

*** = Compound out of QC criteria**

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FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.14 S2 : 10.52

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01		WG255596-5	06/13/19	1419	9.19	10.57
02		WG255596-4	06/13/19	1504	9.16	10.54
03		WG255596-3	06/13/19	1549	9.15	10.53
04		WG255596-2	06/14/19	1108	9.17	10.55
05		WG255596-1	06/14/19	1154	9.14	10.52
06		WG255596-6	06/14/19	1328		
07						
08						
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12						
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14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 2

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.45

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG255596-5	06/13/19	1419	15.51	
02		WG255596-4	06/13/19	1504	15.47	
03		WG255596-3	06/13/19	1549	15.46	
04		WG255596-2	06/14/19	1108	15.49	
05		WG255596-1	06/14/19	1154	15.45	
06		WG255596-6	06/14/19	1328		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Katahdin Analytical Services A000022

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: TM0500

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.06 S2 : 10.45

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01		WG263959-1	10/11/19	0927	9.13		10.51	
02	WG263730-BLA	WG263730-1	10/11/19	1111	9.13		10.51	
03	WG263730-LCS	WG263730-3	10/11/19	1242	9.09		10.47	
04	LFM-99-02B-F	TM0500-1	10/12/19	0135	9.09		10.48	
05		WG263959-2	10/12/19	0656	9.17		10.55	
06		WG263959-5	10/16/19	1337	9.15		10.53	
07	WG263730-LCS	WG263730-2RA	10/16/19	2347	9.05		10.43	
08	LFM-99-02B-F	WG263730-6RA	10/17/19	0205	9.04		10.42	
09	LFM-99-02B-F	WG263730-7RA	10/17/19	0251	9.04		10.42	
10		WG263959-6	10/17/19	1257	9.08		10.46	
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS

S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Katahdin Analytical Services A000023

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: TM0500

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.37

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG263959-1	10/11/19	0927	15.43	
02	WG263730-BLA	WG263730-1	10/11/19	1111	15.43	
03	WG263730-LCS	WG263730-3	10/11/19	1242	15.40	
04	LFM-99-02B-F	TM0500-1	10/12/19	0135	15.40	
05		WG263959-2	10/12/19	0656	15.47	
06		WG263959-5	10/16/19	1337	15.45	
07	WG263730-LCS	WG263730-2RA	10/16/19	2347	15.35	
08	LFM-99-02B-F	WG263730-6RA	10/17/19	0205	15.35	
09	LFM-99-02B-F	WG263730-7RA	10/17/19	0251	15.35	
10		WG263959-6	10/17/19	1257	15.38	
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 2 of 2

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: SDGA02536

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 17.02

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG255596-11	06/13/19	1419	17.05	
02		WG255596-10	06/13/19	1504	17.03	
03		WG255596-9	06/13/19	1549	17.03	
04		WG255596-8	06/14/19	1108	17.04	
05		WG255596-7	06/14/19	1154	17.02	
06		WG255596-12	06/14/19	1328		
07						
08						
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17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII DRO

Katahdin Analytical Services A000025

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: DEVNS-LTM SDG No.: TM0500

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.84

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	#	S1 RT	#
01		WG263959-3	10/11/19	0927	16.84			
02	WG263730-BLA	WG263730-1	10/11/19	1111	16.83			
03	WG263730-LCS	WG263730-3	10/11/19	1242	16.82			
04	LFM-99-02B-F	TM0500-1	10/12/19	0135	16.82			
05		WG263959-4	10/12/19	0656	16.85			
06		WG263959-7	10/16/19	1337	16.83			
07	WG263730-LCS	WG263730-2RA	10/16/19	2347	16.78			
08	LFM-99-02B-F	WG263730-6RA	10/17/19	0205	16.78			
09	LFM-99-02B-F	WG263730-7RA	10/17/19	0251	16.78			
10		WG263959-8	10/17/19	1257	16.80			
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII DRO

Katahdin Analytical Services A000026

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0500-1
Client ID: LFM-99-02B_FAL19
Project: DEVNS-LTM
SDG: TM0500
Lab File ID: 2MJ10112.D

Sample Date: 04-OCT-19
Received Date: 05-OCT-19
Extract Date: 16-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149

Analysis Date: 16-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 01-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		74.4	%					
2,5-Dibromotoluene (PID)		86.8	%					

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Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG264149-1
Client ID: Method Blank Sample
Project:
SDG: TM0500
Lab File ID: 2MJ10100.D

Sample Date:
Received Date:
Extract Date: 15-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149

Analysis Date: 15-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 31-OCT-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	J	1.7	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		83.7	%					
2,5-Dibromotoluene (PID)		98.4	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** DEVNS-LTM **Matrix:** AQ
Lab Code: KAS **SDG:** TM0500

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
LFM-99-02B_FAL19	TM0500-1	B	74.4		86.8	
Method Blank Sample	WG264149-1	B	83.7		98.4	
Laboratory Control S	WG264149-2	B	91.3		108.	
Laboratory Control S	WG264149-3	B	77.8		92.1	
Matrix Spike	WG264149-4	B	83.8		99.2	
Matrix Spike Duplica	WG264149-5	B	87.9		103.	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG264149-2
LCSD ID: WG264149-3
Project:
SDG: TM0500
Report Date: 31-OCT-19
LCS File ID: 2MJ10101.D

Received Date:
Extract Date: 15-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149
LCSD File ID: 2MJ10102.D

Analysis Date: 15-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	303.	101.	302.	101.	ug/L	0	25	70-130
C9-C12 Aliphatics	200.	225.	112.	220.	110.	ug/L	2	25	70-130
C9-C10 Aromatics	100.	111.	111.	108.	108.	ug/L	3	25	70-130
Benzene	100.	103.	103.	101.	101.	ug/L	2	25	70-130
Ethylbenzene	100.	109.	109.	106.	106.	ug/L	3	25	70-130
Methyl tert-butylether	100.	96.8	96.8	94.7	94.7	ug/L	2	25	70-130
Naphthalene	100.	99.1	99.1	95.8	95.8	ug/L	3	25	70-130
Toluene	100.	104.	104.	102.	102.	ug/L	2	25	70-130
m+p-Xylenes	200.	200.	100.	197.	98.5	ug/L	2	25	70-130
o-Xylene	100.	105.	105.	102.	102.	ug/L	3	25	70-130
2,5-Dibromotoluene (FID)			91.3		77.8				70-130
2,5-Dibromotoluene (PID)			108.		92.1				70-130

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ANALYTICAL SERVICES

MS/MSD Recovery Report

MS ID: WG264149-4
MSD ID: WG264149-5
Sample ID: TM0500-1
Client ID: LFM-99-02B_FAL19
Project:
SDG: TM0500
MS File ID: 2MJ10116.D

Received Date:
Extract Date: 16-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149
Report Date: 31-OCT-19
MSD File ID: 2MJ10117.D

Analysis Date: 16-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	300.	ug/L	U100	303	311	101.	104.	3	50	70-130
C9-C12 Aliphatics	200.	200.	ug/L	U100	174	180	87.0	90.0	3	50	70-130
C9-C10 Aromatics	100.	100.	ug/L	U100	105	109	105.	109.	4	50	70-130
Benzene	100.	100.	ug/L	U3.0	99.4	103	99.4	103.	4	50	70-130
Ethylbenzene	100.	100.	ug/L	U5.0	105	109	105.	109.	4	50	70-130
Methyl tert-butylether	100.	100.	ug/L	U5.0	91.1	94.8	91.1	94.8	4	50	70-130
Naphthalene	100.	100.	ug/L	U5.0	95.5	99.8	95.5	99.8	4	50	70-130
Toluene	100.	100.	ug/L	U5.0	101	105	101.	105.	4	50	70-130
m+p-Xylenes	200.	200.	ug/L	U10	195	200	97.5	100.	2	50	70-130
o-Xylene	100.	100.	ug/L	U5.0	100	104	100.	104.	4	50	70-130
2,5-Dibromotoluene (FID)							83.8	87.9			70-130
2,5-Dibromotoluene (PID)							99.2	103.			70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab File ID : 2MJ10100.D
Instrument ID : GC02

SDG : TM0500
Lab Sample ID : WG264149-1
Date Analyzed : 15-OCT-19
Time Analyzed : 13:33
Date Extracted : 15-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG264149-2	2MJ10101.	10/15/19	14:14
Laboratory Control S	WG264149-3	2MJ10102.	10/15/19	14:56
LFM-99-02B_FAL19	TM0500-1	2MJ10112.	10/16/19	02:39
Matrix Spike	WG264149-4	2MJ10116.	10/16/19	05:31
Matrix Spike Duplica	WG264149-5	2MJ10117.	10/16/19	06:13

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0500
Project : DEVNS-LTM **Instrument ID:** GC02
Lab File IDs : 2MJ10063.D 2MJ10064.D 2MJ10065.D **Calibration Date(s):** 11-OCT-19 16:53
2MJ10062.D 2MJ10066.D 2MJ10067.D 11-OCT-19 20:26

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	5061	5308	5557	6266	6050	4706	AVG		5491		10.7798(	25.00000	M (
Methyl tert-butylether	3520	3367	3337	3496	3502	3198	AVG		3403		3.71088	25.00000	O
Benzene	6829	6814	6870	7370	7197	6169	AVG		6875		6.00394	25.00000	O
Toluene	5817	6185	6324	6817	6610	5351	AVG		6184		8.65391	25.00000	O
Ethylbenzene	4894	5083	5333	5919	5762	4635	AVG		5271		9.47534	25.00000	O
m+p-Xylene	6125	6373	6555	6946	6213	4486	AVG		6116		13.89838	25.00000	O
o-Xylene	5082	5437	5607	6039	5758	4686	AVG		5435		8.95291	25.00000	O
1,2,4-trimethylbenzene	5061	5308	5557	6266	6050	4706	AVG		5491		10.7798(	25.00000	O
Naphthalene	2647	16363	40911	287664	579639	+++++	LNR	1.37792	5878		0.99923	0.99000	O
2,5-Dibromotoluene (PID)	+++++	5682	15031	186074	385357	980863	LNR	-1.77028	3320		0.99426	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0500
Project : DEVNS-LTM **Instrument ID:** GC02
Lab File IDs : 2MJ10063.D 2MJ10064.D 2MJ10065.D **Calibration Date(s):** 11-OCT-19 16:53
2MJ10062.D 2MJ10066.D 2MJ10067.D 11-OCT-19 20:26

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5077	5269	5414	5221	5031	5175	AVG		5198		2.65631	25.00000	M (
C9-C12 Aliphatic	5787	4675	4727	4766	5207	5998	AVG		5193		11.1221(	25.00000	M (
n-Pentane	4746	4710	5109	4591	4417	4628	AVG		4700		4.91166	25.00000	O
2-Methylpentane	5241	5337	5288	5265	5070	5174	AVG		5229		1.81279	25.00000	O
Methyl tert-butylether	4332	4733	4377	4243	4265	3990	AVG		4323		5.58226	25.00000	O
2,2,4-Trimethylpentane	5245	5762	5845	5806	5605	5725	AVG		5664		3.90770	25.00000	O
Benzene	7362	7283	7260	7497	7532	7222	AVG		7359		1.75767	25.00000	O
Toluene	7024	7140	7217	7483	7530	7207	AVG		7267		2.73353	25.00000	O
n-Nonane	5496	4636	4837	4954	5020	5802	AVG		5124		8.54471	25.00000	O
n-Decane	5798	3849	3957	4393	5235	6041	AVG		4879		19.3769(	25.00000	O
Ethylbenzene	6297	6416	6763	7199	7274	7025	AVG		6829		5.97331	25.00000	O
m+p-Xylene	6720	6872	7209	7420	7442	7139	AVG		7134		4.07696	25.00000	O
o-Xylene	6572	6991	7296	7500	7534	7172	AVG		7177		5.00884	25.00000	O
1,2,4-trimethylbenzene	6208	6403	6617	7224	7361	7095	AVG		6818		6.94757	25.00000	O
n-Butylcyclohexane	5775	5501	5497	5138	5180	5954	AVG		5508		5.82780	25.00000	O
Naphthalene	2347	14959	37476	241667	511551	1543539	LNR	1.60411	5171		0.99988	0.99000	O
2,5-Dibromotoluene (FID)	+++++	2672	6616	72797	167070	559910	LNR	8.16972	1907		0.99902	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264149-6
Lab File ID : 2MJ10099.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0500
Analytical Date: 10/15/19 12:11
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
2	Methyl tert-butylether	3403	3456	3456	0.100	1.54145	25.00000	Averaged	
3	Benzene	6875	7519	7519	0.100	9.36690	25.00000	Averaged	
4	Toluene	6184	6945	6945	0.100	12.30263	25.00000	Averaged	
5	Ethylbenzene	5271	6095	6095	0.100	15.63852	25.00000	Averaged	
6	m+p-Xylene	6116	7177	7177	0.100	17.34425	25.00000	Averaged	
7	o-Xylene	5435	6228	6228	0.100	14.59352	25.00000	Averaged	
8	1,2,4-trimethylbenzene	5491	6549	6549	0.100	19.25540	25.00000	Averaged	
10	Naphthalene	50.00000	56.21643	6447	0.100	12.43287	25.00000	Linear	
11	2,5-Dibromotoluene (PID)	50.00000	72.32222	4919	0.100	44.64444	25.00000	Linear	*

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264149-7
Lab File ID : 2MJ10121.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0500
Analytical Date: 10/16/19 08:59
Instrument ID: GC02
Column ID: A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	3403	3679	3679	0.100	8.10370	25.00000	Averaged
3	Benzene	6875	7637	7637	0.100	11.08566	25.00000	Averaged
4	Toluene	6184	7036	7036	0.100	13.78093	25.00000	Averaged
5	Ethylbenzene	5271	6087	6087	0.100	15.47422	25.00000	Averaged
6	m+p-Xylene	6116	7123	7123	0.100	16.45337	25.00000	Averaged
7	o-Xylene	5435	6191	6191	0.100	13.91310	25.00000	Averaged
8	1,2,4-trimethylbenzene	5491	6361	6361	0.100	15.83845	25.00000	Averaged
10	Naphthalene	50.00000	51.88758	5938	0.100	3.77516	25.00000	Linear
11	2,5-Dibromotoluene (PID)	50.00000	45.22846	3120	0.100	-9.54308	25.00000	Linear

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264149-6
Lab File ID : 2MJ10099.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0500
Analytical Date: 10/15/19 12:11
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4700	4791	4791	0.100	1.94291	25.00000	Averaged
6	2-Methylpentane	5229	5683	5683	0.100	8.68741	25.00000	Averaged
7	Methyl tert-butylether	4323	4454	4454	0.100	3.01656	25.00000	Averaged
8	2,2,4-Trimethylpentane	5664	6418	6418	0.100	13.29724	25.00000	Averaged
9	Benzene	7359	7828	7828	0.100	6.37312	25.00000	Averaged
11	Toluene	7267	7797	7797	0.100	7.29938	25.00000	Averaged
12	n-Nonane	5124	5545	5545	0.100	8.21477	30.00000	Averaged
13	n-Decane	4879	4933	4933	0.100	1.10337	25.00000	Averaged
14	Ethylbenzene	6829	7526	7526	0.100	10.20424	25.00000	Averaged
15	m+p-Xylene	7134	7789	7789	0.100	9.18294	25.00000	Averaged
16	o-Xylene	7177	7865	7865	0.100	9.57817	25.00000	Averaged
18	1,2,4-trimethylbenzene	6818	7707	7707	0.100	13.04060	25.00000	Averaged
19	n-Butylcyclohexane	5508	5903	5903	0.100	7.18542	25.00000	Averaged
20	Naphthalene	50.00000	55.00031	5522	0.100	10.00062	25.00000	Linear
21	2,5-Dibromotoluene (FID)	50.00000	60.80850	2008	0.100	21.61700	25.00000	Linear

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Lab ID : WG264149-7
Lab File ID : 2MJ10121.D
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26

SDG: TM0500
Analytical Date: 10/16/19 08:59
Instrument ID: GC02
Column ID: B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4700	4281	4281	0.100	-8.92660	25.00000	Averaged
6	2-Methylpentane	5229	5053	5053	0.100	-3.36594	25.00000	Averaged
7	Methyl tert-butylether	4323	4622	4622	0.100	6.91913	25.00000	Averaged
8	2,2,4-Trimethylpentane	5664	5647	5647	0.100	-0.31429	25.00000	Averaged
9	Benzene	7359	7927	7927	0.100	7.71811	25.00000	Averaged
11	Toluene	7267	7935	7935	0.100	9.19645	25.00000	Averaged
12	n-Nonane	5124	4540	4540	0.100	-11.40164	30.00000	Averaged
13	n-Decane	4879	3962	3962	0.100	-18.78804	25.00000	Averaged
14	Ethylbenzene	6829	7584	7584	0.100	11.05943	25.00000	Averaged
15	m+p-Xylene	7134	7866	7866	0.100	10.26206	25.00000	Averaged
16	o-Xylene	7177	7957	7957	0.100	10.85438	25.00000	Averaged
18	1,2,4-trimethylbenzene	6818	7613	7613	0.100	11.66395	25.00000	Averaged
19	n-Butylcyclohexane	5508	4940	4940	0.100	-10.31272	25.00000	Averaged
20	Naphthalene	50.00000	52.09516	5222	0.100	4.19032	25.00000	Linear
21	2,5-Dibromotoluene (FID)	50.00000	42.08600	1294	0.100	-15.82800	25.00000	Linear

*** = Compound out of QC criteria**

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Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
Project : DEVNS-LTM
Instrument ID : GC02

SDG : TM0500

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG264520-4	10/11/19	16:53		31.284
Initial Calibration	WG264520-4	10/11/19	16:53	31.274	
Initial Calibration	WG264520-1	10/11/19	17:34		31.287
Initial Calibration	WG264520-1	10/11/19	17:34	31.271	
Initial Calibration	WG264520-2	10/11/19	18:17		31.299
Initial Calibration	WG264520-2	10/11/19	18:17	31.289	
Initial Calibration	WG264520-3	10/11/19	19:00		31.295
Initial Calibration	WG264520-3	10/11/19	19:00	31.285	
Initial Calibration	WG264520-5	10/11/19	19:43		31.296
Initial Calibration	WG264520-5	10/11/19	19:43	31.287	
Initial Calibration	WG264520-6	10/11/19	20:26		31.303
Initial Calibration	WG264520-6	10/11/19	20:26	31.293	
Independent Source	WG264520-7	10/11/19	21:10	31.29	31.299
Continuing Calibrati	WG264149-6	10/15/19	12:11	31.278	31.288
Method Blank Sample	WG264149-1	10/15/19	13:33	31.285	31.296
Laboratory Control S	WG264149-2	10/15/19	14:14	31.288	31.297
Laboratory Control S	WG264149-3	10/15/19	14:56	31.281	31.291
LFM-99-02B_FAL19	TM0500-1	10/16/19	02:39	31.297	31.307
Matrix Spike	WG264149-4	10/16/19	05:31	31.299	31.308
Matrix Spike Duplica	WG264149-5	10/16/19	06:13	31.289	31.299
Continuing Calibrati	WG264149-7	10/16/19	08:59	31.286	31.297

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CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # DCL_FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments: On Ice
N: = native
WG = Ground water
NOTE; Pesticides/PCBs are combined (2-1L amber glass)
Metals are TOTAL metals include: Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, and Ag by 6010 and can be combined with Hg and As into 1-250 ml HNO3 preserved bottles/

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
1	2 x 1L amber glass bottles, Cool to <6°C
5	1 x 125mL plastic, Cool < 6°C
6	1 x 125mL, plastic, Cool < 6°C
9	1 x 250mL, plastic, HNO3, pH < 2, Cool < 6°C
21	1 x 2-1 Liter, amber, glass, Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C
47	1 x 500mL, amber glass, H2SO4, Cool < 6°C
48	1 x 250mL plastic, NaOH to pH >12, Cool < 6°C
49	1 x 500mL plastic, Cool < 6°C

Event: KOMAN, Long Term Monitoring, DCL Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: SW8082A - PCB (21)	SW9056A - Cl SO4 (5)	E410.4 - COD (47)	SW6010C - Ba Cd Cr Cu Fe Pb Mn Se (9)	SW6020A - As (9)	SW7470A - Mercury (9)	SW8081B - Pesticides (21)	A2320B - Alkalinity (46)	E353.2 - Nitrite Nitrate as N (47)	SW9012B - Cyanide (48)	A2540C - TDS (49)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	
11	LFM-99-02B_Fa19	WG	10/4/19	1135	MS	6	3	3	3	3	3	6	3	3	3	3	LFM-99-02B	N	14.50	25.83	MS/MSD
12																					
13																					
14																					
15																					
16																					
17																					

Turnaround Time: 21 Days

680-175052 Chain of Custody

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1421
	10/4/19	1300
	10/4/19	1821

Received by: *(Signature)*	Date	Time
	10/4/19	1421
	10-4-19	1500

Shipping Date / Carrier / Airbill Number

3.7 (CF) 3.6°C

Received by Laboratory: *(Signature, Date, Time)* **& condition**

10-05-19 0925

360325-Boston 360325-Boston 360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
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(508) 508.366.7442, lekes@komangs.com

COC # DCL_FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 18-706	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments:
N: = native On Ice
WG = Ground water
NOTE; Pesticides/PCBs are combined (2-1L amber glass)
Metals are TOTAL metals include: Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, and Ag by 6010 and can be combined with Hg and As into 1-250 ml HNO3 preserved bottles/

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
1	2 x 1L amber glass bottles, Cool to <6°C
5	1 x 125mL plastic, Cool < 6°C
6	1 x 125mL, plastic, Cool < 6°C
9	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
21	1 x 2-1 Liter, amber, glass, Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C
47	1 x 500mL, amber glass, H2SO4; Cool < 6°C
48	1 x 250mL plastic, NaOH to pH >12; Cool < 6°C
49	1 x 500mL plastic, Cool < 6°C

Event: KOMAN, Long Term Monitoring, DCL Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	SW8082A - PCB (21)	SW9056A - Cl SO4 (5)	E410.4 - COD (47 ~~6~~)	SW6010C - Ba Cd Cr Cu Fe Pb Mn Se (9)	SW6020A - As (9)	SW7470A - Mercury (9)	SW8081B - Pesticides (21)	A2320B - Alkalinity (46)	E353.2 - Nitrite Nitrate as N (47)	SW9012B - Cyanide (48)	A2540C - TDS (49)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	
11	LFM-99-02B_Fal19	WG	10/4/19	1135	MS	6	3	3	3	3	3	6	3	3	3	3	LFM-99-02B	N	14.50	25.83	MS/MSD
12																					
13																					
14																					
15																					
16																					
17																					

Turnaround Time: 21 Days

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1421
	10/4/19	1700
	10/4/19	1821

Received by: *(Signature)*	Date	Time
	10/4/19	1421
	10-4-19	1500
	10/5/19	0900

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

360325-Boston 360325-Boston

CHAIN-OF-CUSTODY RECORD

TMOSOO

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # DCL_FAL19

360325-Boston

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, DCL Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number, insert	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:
on ICE
Ni = Native
WG Ground water

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2 x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6°C
4	2 x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6°C

Event: KOMAN, Long Term Monitoring, DCL Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: MADEPEP - EPH with PAHs	MADEPVP - VPH with targets	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	~~LFM-03-07_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-03-07~~	N1	10.90	~~20.90~~		1
2	~~LFM-99-02B_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-99-02B~~	~~N1~~	~~14.50~~	~~25.83~~		1
3	~~LFM-99-05A_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-99-05A~~	~~N1~~	~~19.00~~	~~28.88~~		1
4	~~LFM-DUP-01_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-99-05A~~	~~FD1~~	~~19.00~~	~~29.56~~		1
5	~~LFM-99-06ARP_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-99-06ARP~~	~~N1~~	~~10.09~~	~~18.39~~		1
6	LFM-99-02B_Fall9	WG	10/4/19	1135	MS	6	9	LFM-99-02B	N1	14.50	25.83		
7													
8													
9													
10													
		Turnaround Time: 21 Days											

Relinquished by: *(Signature)*	Date	Time
	10/4/19	1421
	10/4/19	1500
	10-4-19	1700
FedEx		

Received by: *(Signature)*	Date	Time
	10/4/19	1421
	10-4-19	1500
FedEx		
A. Brewer	10/5/19	1225

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175052-1

Login Number: 175052
List Number: 1
Creator: Banda, Christy S

List Source: Eurofins TestAmerica, Savannah

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

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175052-1

Login Number: 175052
List Number: 2
Creator: Zimmerman, Steven M

List Source: Eurofins TestAmerica, Denver
List Creation: 10/08/19 01:14 PM

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

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175052-1

Login Number: 175052
List Number: 3
Creator: Zimmerman, Steven M

List Source: Eurofins TestAmerica, Denver
List Creation: 10/08/19 01:18 PM

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175052-1
Project/Site: LTM / DCL Fall 2019

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	SAVLAB	
Alabama	State	41450	06-30-20
Alaska	State	GA00006	06-30-20
Alaska (UST)	State	17-016	09-30-20
ANAB	Dept. of Defense ELAP	L2463	09-22-22
ANAB	ISO/IEC 17025	L2463.01	09-22-22
Arkansas DEQ	State	19-015-0	02-01-20
California	State	2939	06-30-20
Colorado	State	GA00006	12-31-19
Connecticut	State	PH-0161	03-31-21
Florida	NELAP	E87052	06-30-20
GA Dept. of Agriculture	State Program	N/A	06-12-20
Georgia	State	E87052	06-30-20
Georgia (DW)	State	803	06-30-20
Guam	State	19-007R	04-17-20
Hawaii	State	<cert No.>	06-30-20
Indiana	State	C-GA-02	06-30-20
Iowa	State	353	09-22-20
Kansas	NELAP	E-10322	10-15-20
Kentucky (DW)	State	KY90084	12-31-19
Kentucky (UST)	State	<cert No.>	06-30-20
Kentucky (WW)	State	KY90084	12-31-19
Louisiana	NELAP	02011	06-30-20
Louisiana (DW)	State	LA009	12-31-19
Maine	State	GA00006	09-26-20
Maryland	State	250	12-31-19
Massachusetts	State	M-GA006	06-30-20
Michigan	State	9925	06-30-20
Mississippi	State	<cert No.>	06-30-20
Nebraska	State	NE-OS-7-04	06-30-20
New Hampshire	NELAP	2096	05-29-20
New Jersey	NELAP	GA769	06-30-20
New Mexico	State	GA00006	06-30-20
New York	NELAP	10842	04-01-20
North Carolina (DW)	State	13701	07-31-20
North Carolina (WW/SW)	State	269	12-31-19
Oklahoma	State	9984	08-31-20
Pennsylvania	NELAP	68-00474	06-30-20
Puerto Rico	State	GA00006	01-01-20
South Carolina	State	98001	06-30-20
Tennessee	State	02961	06-30-20
Texas	NELAP	T1047004185-19-14	11-30-19
Texas	TCEQ Water Supply	T104704185	09-23-20
US Fish & Wildlife	US Federal Programs	LE058448-0	07-31-20
Virginia	NELAP	10509	06-14-20
Washington	State	C805	06-10-20
West Virginia (DW)	State	9950C	12-31-19
West Virginia DEP	State	094	11-30-19
Wisconsin	State	999819810	08-31-20
Wyoming	State	8TMS-L	06-30-20 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175052-1
Project/Site: LTM / DCL Fall 2019

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-21

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-175305-1
Client Project/Site: LTM/DCL Fall 2019
Revision: 1

For:
KOMAN Government Solutions, LLC
293 Boston Post Road West
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Authorized for release by:
12/6/2019 4:26:22 PM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

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

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

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

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Job ID: 680-175305-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: LTM/DCL Fall 2019

Report Number: 680-175305-1

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 the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 10/11/2019 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.5º C, 1.3º C, 1.4º C and 3.1º C.

PESTICIDES AND PCBS
Samples LFM-99-05A_FAL19 (680-175305-1), LFM-DUP01_FAL19 (680-175305-2) and LFM-99-06ARP_FAL19 (680-175305-3) were analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 10/14/2019 and analyzed on 10/18/2019.

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

METALS (ICP)
Samples LFM-99-05A_FAL19 (680-175305-1), LFM-DUP01_FAL19 (680-175305-2) and LFM-99-06ARP_FAL19 (680-175305-3) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/14/2019 and analyzed on 10/17/2019.

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

METALS
Samples LFM-99-05A_FAL19 (680-175305-1), LFM-DUP01_FAL19 (680-175305-2) and LFM-99-06ARP_FAL19 (680-175305-3) were analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared and analyzed on 10/14/2019.

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

MERCURY
Samples LFM-99-05A_FAL19 (680-175305-1), LFM-DUP01_FAL19 (680-175305-2) and LFM-99-06ARP_FAL19 (680-175305-3) were analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 10/13/2019 and analyzed on 10/14/2019.

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

ALKALINITY
Samples LFM-99-05A_FAL19 (680-175305-1), LFM-DUP01_FAL19 (680-175305-2) and LFM-99-06ARP_FAL19 (680-175305-3) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 10/21/2019.

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

Job ID: 680-175305-1 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

TOTAL DISSOLVED SOLIDS

Samples LFM-99-05A_FAL19 (680-175305-1), LFM-DUP01_FAL19 (680-175305-2) and LFM-99-06ARP_FAL19 (680-175305-3) were analyzed for total dissolved solids in accordance with SM 2540C. The samples were analyzed on 10/15/2019.

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

NITRATE-NITRITE AS NITROGEN

Samples LFM-99-05A_FAL19 (680-175305-1), LFM-DUP01_FAL19 (680-175305-2) and LFM-99-06ARP_FAL19 (680-175305-3) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 10/17/2019.

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

CHEMICAL OXYGEN DEMAND

Samples LFM-99-05A_FAL19 (680-175305-1), LFM-DUP01_FAL19 (680-175305-2) and LFM-99-06ARP_FAL19 (680-175305-3) were analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 10/15/2019.

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

CYANIDE

Samples LFM-99-05A_FAL19 (680-175305-1), LFM-DUP01_FAL19 (680-175305-2) and LFM-99-06ARP_FAL19 (680-175305-3) were analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 10/22/2019.

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

ANIONS BY ION CHROMATOGRAPHY (28 DAY)

Samples LFM-99-05A_FAL19 (680-175305-1), LFM-DUP01_FAL19 (680-175305-2) and LFM-99-06ARP_FAL19 (680-175305-3) were analyzed for Anions by Ion Chromatography (28 Day) in accordance with SW 846 9056A. The samples were analyzed on 10/17/2019 and 10/18/2019.

Samples LFM-99-05A_FAL19 (680-175305-1)[5X], LFM-DUP01_FAL19 (680-175305-2)[5X] and LFM-99-06ARP_FAL19 (680-175305-3) [5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/DCL Fall 2019

Job ID: 680-175305-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-175305-1	LFM-99-05A_FAL19	WG	10/08/19 09:45	10/11/19 09:10	
680-175305-2	LFM-DUP01_FAL19	WG	10/08/19 09:50	10/11/19 09:10	
680-175305-3	LFM-99-06ARP_FAL19	WG	10/08/19 12:00	10/11/19 09:10	
680-175305-17	Trip Blank2_100819	WQ	10/08/19 00:00	10/11/19 09:10	

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/DCL Fall 2019

Job ID: 680-175305-1

Method	Method Description	Protocol	Laboratory
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
9056A	Anions, Ion Chromatography	SW846	TAL SAV
6010C	Metals (ICP)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
353.2	Nitrogen, Nitrate-Nitrite	MCAWW	TAL DEN
410.4	COD	MCAWW	TAL DEN
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
SM 2320B	Alkalinity	SM	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
MA-EPH	MADEP EPH (Extractable Petroleum Hydroca	MA DEP	
MA-VPH	MADEP VPH Volatile Petroleum Hydrocarbon	MA DEP	
3010A	Preparation, Total Metals	SW846	TAL SAV
3520C	Liquid-Liquid Extraction (Continuous)	SW846	TAL SAV
7470A	Preparation, Mercury	SW846	TAL SAV
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency
MA DEP = Massachusetts Department Of Environmental Protection
MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074
TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

HPLC/IC

Qualifier	Qualifier Description
D	The reported value is from a dilution.
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

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

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/DCL Fall 2019

Job ID: 680-175305-1

Client Sample ID: LFM-99-05A_FAL19

Date Collected: 10/08/19 09:45
Date Received: 10/11/19 09:10

Lab Sample ID: 680-175305-1

Matrix: WG

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0091	U M	0.025	0.0091	0.0037	ug/L		10/18/19 18:35	1
alpha-BHC	0.0051	U	0.025	0.0051	0.0017	ug/L		10/18/19 18:35	1
beta-BHC	0.0091	U	0.025	0.0091	0.0046	ug/L		10/18/19 18:35	1
Chlordane (technical)	0.15	U	0.25	0.15	0.048	ug/L		10/18/19 18:35	1
4,4'-DDD	0.0051	U	0.025	0.0051	0.0032	ug/L		10/18/19 18:35	1
4,4'-DDE	0.0051	U M	0.025	0.0051	0.0026	ug/L		10/18/19 18:35	1
4,4'-DDT	0.0091	U	0.025	0.0091	0.0036	ug/L		10/18/19 18:35	1
delta-BHC	0.0091	U	0.025	0.0091	0.0038	ug/L		10/18/19 18:35	1
Dieldrin	0.0051	U	0.025	0.0051	0.0019	ug/L		10/18/19 18:35	1
Endosulfan I	0.0051	U	0.025	0.0051	0.0018	ug/L		10/18/19 18:35	1
Endosulfan II	0.0051	U	0.025	0.0051	0.0021	ug/L		10/18/19 18:35	1
Endosulfan sulfate	0.0051	U	0.025	0.0051	0.0026	ug/L		10/18/19 18:35	1
Endrin	0.0051	U	0.025	0.0051	0.0027	ug/L		10/18/19 18:35	1
Endrin aldehyde	0.0051	U M	0.025	0.0051	0.0031	ug/L		10/18/19 18:35	1
Endrin ketone	0.0051	U	0.025	0.0051	0.0023	ug/L		10/18/19 18:35	1
gamma-BHC (Lindane)	0.0051	U	0.025	0.0051	0.0018	ug/L		10/18/19 18:35	1
Heptachlor	0.0091	U	0.025	0.0091	0.0036	ug/L		10/18/19 18:35	1
Heptachlor epoxide	0.0051	U	0.025	0.0051	0.0019	ug/L		10/18/19 18:35	1
Methoxychlor	0.0091	U	0.025	0.0091	0.0050	ug/L		10/18/19 18:35	1
PCB-1016	0.18	U	0.51	0.18	0.091	ug/L		10/18/19 18:35	1
PCB-1221	0.17	U	0.51	0.17	0.096	ug/L		10/18/19 18:35	1
PCB-1232	0.23	U	0.51	0.23	0.13	ug/L		10/18/19 18:35	1
PCB-1242	0.23	U	0.51	0.23	0.096	ug/L		10/18/19 18:35	1
PCB-1248	0.23	U	0.51	0.23	0.11	ug/L		10/18/19 18:35	1
PCB-1254	0.17	U M	0.51	0.17	0.056	ug/L		10/18/19 18:35	1
PCB-1260	0.18	U	0.51	0.18	0.061	ug/L		10/18/19 18:35	1
Toxaphene	0.41	U	2.5	0.41	0.20	ug/L		10/18/19 18:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*47*		*14 - 130*	*10/14/19 17:13*	*10/18/19 18:35*	*1*
Tetrachloro-m-xylene	*80*		*44 - 124*	*10/14/19 17:13*	*10/18/19 18:35*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Sulfate	**21**		1.0	1.0	0.40	mg/L		10/17/19 15:10	1

Method: 9056A - Anions, Ion Chromatography - DL

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**220**	**D**	2.5	2.5	1.0	mg/L		10/18/19 19:26	5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**22**		10	5.0	1.7	ug/L		10/17/19 20:52	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		10/17/19 20:52	1
Chromium	4.0	U	10	4.0	1.6	ug/L		10/17/19 20:52	1
Copper	5.0	U	20	5.0	1.8	ug/L		10/17/19 20:52	1
Iron	**34**	**J**	50	50	17	ug/L		10/17/19 20:52	1
Lead	10	U	10	10	3.9	ug/L		10/17/19 20:52	1
Manganese	3.0	U	10	3.0	1.0	ug/L		10/17/19 20:52	1
Selenium	20	U	20	20	9.9	ug/L		10/17/19 20:52	1

Client Sample ID: LFM-99-05A_FAL19

Lab Sample ID: 680-175305-1

Date Collected: 10/08/19 09:45

Matrix: WG

Date Received: 10/11/19 09:10

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Silver	1.5	U	10	1.5	0.60	ug/L		10/17/19 20:52	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/14/19 23:57	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/14/19 03:35	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.82**		0.10	0.050	0.019	mg/L		10/17/19 19:55	1
Chemical Oxygen Demand	20	U	20	20	8.7	mg/L		10/15/19 12:24	1
Cyanide, Total	**0.0027**	**J**	0.010	0.0050	0.0025	mg/L		10/22/19 16:10	1
Alkalinity	**88**		10	10	3.1	mg/L		10/21/19 18:19	1
Total Dissolved Solids (TDS)	**540**		10	10	4.7	mg/L		10/15/19 10:33	1

Client Sample ID: LFM-DUP01_FAL19

Lab Sample ID: 680-175305-2

Date Collected: 10/08/19 09:50

Matrix: WG

Date Received: 10/11/19 09:10

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0093	U M	0.026	0.0093	0.0037	ug/L		10/18/19 18:49	1
alpha-BHC	0.0051	U	0.026	0.0051	0.0017	ug/L		10/18/19 18:49	1
beta-BHC	0.0093	U	0.026	0.0093	0.0047	ug/L		10/18/19 18:49	1
Chlordane (technical)	0.15	U M	0.26	0.15	0.049	ug/L		10/18/19 18:49	1
4,4'-DDD	0.0051	U	0.026	0.0051	0.0032	ug/L		10/18/19 18:49	1
4,4'-DDE	0.0051	U M	0.026	0.0051	0.0026	ug/L		10/18/19 18:49	1
4,4'-DDT	0.0093	U	0.026	0.0093	0.0036	ug/L		10/18/19 18:49	1
delta-BHC	0.0093	U M	0.026	0.0093	0.0039	ug/L		10/18/19 18:49	1
Dieldrin	0.0051	U	0.026	0.0051	0.0020	ug/L		10/18/19 18:49	1
Endosulfan I	0.0051	U	0.026	0.0051	0.0018	ug/L		10/18/19 18:49	1
Endosulfan II	0.0051	U	0.026	0.0051	0.0022	ug/L		10/18/19 18:49	1
Endosulfan sulfate	0.0051	U	0.026	0.0051	0.0026	ug/L		10/18/19 18:49	1
Endrin	0.0051	U	0.026	0.0051	0.0027	ug/L		10/18/19 18:49	1
Endrin aldehyde	0.0051	U M	0.026	0.0051	0.0031	ug/L		10/18/19 18:49	1
Endrin ketone	0.0051	U	0.026	0.0051	0.0024	ug/L		10/18/19 18:49	1
gamma-BHC (Lindane)	0.0051	U	0.026	0.0051	0.0019	ug/L		10/18/19 18:49	1
Heptachlor	0.0093	U	0.026	0.0093	0.0037	ug/L		10/18/19 18:49	1
Heptachlor epoxide	0.0051	U	0.026	0.0051	0.0019	ug/L		10/18/19 18:49	1
Methoxychlor	0.0093	U	0.026	0.0093	0.0050	ug/L		10/18/19 18:49	1
PCB-1016	0.19	U M	0.51	0.19	0.093	ug/L		10/18/19 18:49	1
PCB-1221	0.17	U	0.51	0.17	0.098	ug/L		10/18/19 18:49	1
PCB-1232	0.23	U M	0.51	0.23	0.13	ug/L		10/18/19 18:49	1
PCB-1242	0.23	U M	0.51	0.23	0.098	ug/L		10/18/19 18:49	1
PCB-1248	0.23	U	0.51	0.23	0.11	ug/L		10/18/19 18:49	1
PCB-1254	0.17	U M	0.51	0.17	0.057	ug/L		10/18/19 18:49	1
PCB-1260	0.19	U	0.51	0.19	0.062	ug/L		10/18/19 18:49	1
Toxaphene	0.41	U	2.6	0.41	0.21	ug/L		10/18/19 18:49	1

Client Sample ID: LFM-DUP01_FAL19

Lab Sample ID: 680-175305-2

Date Collected: 10/08/19 09:50

Matrix: WG

Date Received: 10/11/19 09:10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*47*		*14 - 130*	*10/14/19 17:13*	*10/18/19 18:49*	*1*
Tetrachloro-m-xylene	*72*		*44 - 124*	*10/14/19 17:13*	*10/18/19 18:49*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Sulfate	**21**		1.0	1.0	0.40	mg/L		10/17/19 15:22	1

Method: 9056A - Anions, Ion Chromatography - DL

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**220**	**D**	2.5	2.5	1.0	mg/L		10/18/19 19:39	5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**24**		10	5.0	1.7	ug/L		10/17/19 20:38	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		10/17/19 20:38	1
Chromium	4.0	U	10	4.0	1.6	ug/L		10/17/19 20:38	1
Copper	5.0	U	20	5.0	1.8	ug/L		10/17/19 20:38	1
Iron	50	U	50	50	17	ug/L		10/17/19 20:38	1
Lead	10	U	10	10	3.9	ug/L		10/17/19 20:38	1
Manganese	3.0	U	10	3.0	1.0	ug/L		10/17/19 20:38	1
Selenium	20	U	20	20	9.9	ug/L		10/17/19 20:38	1
Silver	1.5	U	10	1.5	0.60	ug/L		10/17/19 20:38	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/14/19 23:42	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/14/19 03:38	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	**0.92**		0.10	0.050	0.019	mg/L		10/17/19 19:57	1
Chemical Oxygen Demand	20	U	20	20	8.7	mg/L		10/15/19 12:24	1
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		10/22/19 16:10	1
Alkalinity	**89**		10	10	3.1	mg/L		10/21/19 18:24	1
Total Dissolved Solids (TDS)	**530**		10	10	4.7	mg/L		10/15/19 10:33	1

Client Sample ID: LFM-99-06ARP_FAL19

Lab Sample ID: 680-175305-3

Date Collected: 10/08/19 12:00

Matrix: WG

Date Received: 10/11/19 09:10

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0092	U M	0.025	0.0092	0.0037	ug/L		10/18/19 19:04	1
alpha-BHC	0.0051	U	0.025	0.0051	0.0017	ug/L		10/18/19 19:04	1
beta-BHC	0.0092	U	0.025	0.0092	0.0046	ug/L		10/18/19 19:04	1
Chlordane (technical)	0.15	U	0.25	0.15	0.048	ug/L		10/18/19 19:04	1
4,4'-DDD	0.0051	U	0.025	0.0051	0.0032	ug/L		10/18/19 19:04	1
4,4'-DDE	0.0051	U M	0.025	0.0051	0.0026	ug/L		10/18/19 19:04	1
4,4'-DDT	0.0092	U	0.025	0.0092	0.0036	ug/L		10/18/19 19:04	1

Client Sample ID: LFM-99-06ARP_FAL19

Date Collected: 10/08/19 12:00
Date Received: 10/11/19 09:10

Lab Sample ID: 680-175305-3

Matrix: WG

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
delta-BHC	0.0092	U	0.025	0.0092	0.0038	ug/L		10/18/19 19:04	1
Dieldrin	0.0051	U	0.025	0.0051	0.0019	ug/L		10/18/19 19:04	1
Endosulfan I	0.0051	U	0.025	0.0051	0.0018	ug/L		10/18/19 19:04	1
Endosulfan II	0.0051	U	0.025	0.0051	0.0021	ug/L		10/18/19 19:04	1
Endosulfan sulfate	0.0051	U	0.025	0.0051	0.0026	ug/L		10/18/19 19:04	1
Endrin	0.0051	U	0.025	0.0051	0.0027	ug/L		10/18/19 19:04	1
Endrin aldehyde	0.0051	U M	0.025	0.0051	0.0031	ug/L		10/18/19 19:04	1
Endrin ketone	0.0051	U	0.025	0.0051	0.0023	ug/L		10/18/19 19:04	1
gamma-BHC (Lindane)	0.0051	U	0.025	0.0051	0.0018	ug/L		10/18/19 19:04	1
Heptachlor	0.0092	U	0.025	0.0092	0.0036	ug/L		10/18/19 19:04	1
Heptachlor epoxide	0.0051	U	0.025	0.0051	0.0019	ug/L		10/18/19 19:04	1
Methoxychlor	0.0092	U	0.025	0.0092	0.0050	ug/L		10/18/19 19:04	1
PCB-1016	0.18	U	0.51	0.18	0.092	ug/L		10/18/19 19:04	1
PCB-1221	0.17	U	0.51	0.17	0.097	ug/L		10/18/19 19:04	1
PCB-1232	0.23	U	0.51	0.23	0.13	ug/L		10/18/19 19:04	1
PCB-1242	0.23	U	0.51	0.23	0.097	ug/L		10/18/19 19:04	1
PCB-1248	0.23	U	0.51	0.23	0.11	ug/L		10/18/19 19:04	1
PCB-1254	0.17	U M	0.51	0.17	0.056	ug/L		10/18/19 19:04	1
PCB-1260	0.18	U	0.51	0.18	0.061	ug/L		10/18/19 19:04	1
Toxaphene	0.41	U M	2.5	0.41	0.20	ug/L		10/18/19 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*81*		*14 - 130*	*10/14/19 17:13*	*10/18/19 19:04*	*1*
Tetrachloro-m-xylene	*74*		*44 - 124*	*10/14/19 17:13*	*10/18/19 19:04*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Sulfate	**26**		1.0	1.0	0.40	mg/L		10/17/19 15:35	1

Method: 9056A - Anions, Ion Chromatography - DL

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	**340**	**D**	2.5	2.5	1.0	mg/L		10/18/19 19:52	5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**9.5**	**J**	10	5.0	1.7	ug/L		10/17/19 20:47	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		10/17/19 20:47	1
Chromium	4.0	U	10	4.0	1.6	ug/L		10/17/19 20:47	1
Copper	5.0	U	20	5.0	1.8	ug/L		10/17/19 20:47	1
Iron	50	U	50	50	17	ug/L		10/17/19 20:47	1
Lead	10	U	10	10	3.9	ug/L		10/17/19 20:47	1
Manganese	3.0	U	10	3.0	1.0	ug/L		10/17/19 20:47	1
Selenium	**12**	**J**	20	20	9.9	ug/L		10/17/19 20:47	1
Silver	1.5	U	10	1.5	0.60	ug/L		10/17/19 20:47	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/14/19 23:53	1

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/DCL Fall 2019

Job ID: 680-175305-1

Client Sample ID: LFM-99-06ARP_FAL19

Date Collected: 10/08/19 12:00
Date Received: 10/11/19 09:10

Lab Sample ID: 680-175305-3

Matrix: WG

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/14/19 03:42	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	1.3		0.10	0.050	0.019	mg/L		10/17/19 19:59	1
Chemical Oxygen Demand	9.8	J	20	20	8.7	mg/L		10/15/19 12:24	1
Cyanide, Total	0.0064	J	0.010	0.0050	0.0025	mg/L		10/22/19 16:10	1
Alkalinity	130		10	10	3.1	mg/L		10/21/19 18:30	1
Total Dissolved Solids (TDS)	850		20	20	9.4	mg/L		10/15/19 10:33	1

Surrogate Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/DCL Fall 2019

Job ID: 680-175305-1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCBP1 (14-130)	TCX1 (44-124)
LCS 680-590838/23-A	Lab Control Sample	90	72
LCS 680-590838/27-A	Lab Control Sample	74	74
LCSD 680-590838/24-A	Lab Control Sample Dup	75	68
MB 680-590838/22-A	Method Blank	57	78

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Matrix: WG **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCBP1 (14-130)	TCX1 (44-124)
680-175305-1	LFM-99-05A_FAL19	47	80
680-175305-2	LFM-DUP01_FAL19	47	72
680-175305-3	LFM-99-06ARP_FAL19	81	74

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-590838/22-A
Matrix: Water
Analysis Batch: 591514

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 590838

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0090	U	0.025	0.0090	0.0036	ug/L		10/17/19 16:06	1
alpha-BHC	0.0050	U M	0.025	0.0050	0.0017	ug/L		10/17/19 16:06	1
beta-BHC	0.0090	U M	0.025	0.0090	0.0046	ug/L		10/17/19 16:06	1
Chlordane (technical)	0.15	U M	0.25	0.15	0.048	ug/L		10/17/19 16:06	1
4,4'-DDD	0.0050	U M	0.025	0.0050	0.0032	ug/L		10/17/19 16:06	1
4,4'-DDE	0.0050	U M	0.025	0.0050	0.0026	ug/L		10/17/19 16:06	1
4,4'-DDT	0.0090	U	0.025	0.0090	0.0035	ug/L		10/17/19 16:06	1
delta-BHC	0.0090	U M	0.025	0.0090	0.0038	ug/L		10/17/19 16:06	1
Dieldrin	0.0050	U M	0.025	0.0050	0.0019	ug/L		10/17/19 16:06	1
Endosulfan I	0.0050	U	0.025	0.0050	0.0018	ug/L		10/17/19 16:06	1
Endosulfan II	0.0050	U	0.025	0.0050	0.0021	ug/L		10/17/19 16:06	1
Endosulfan sulfate	0.0050	U	0.025	0.0050	0.0026	ug/L		10/17/19 16:06	1
Endrin	0.0050	U	0.025	0.0050	0.0027	ug/L		10/17/19 16:06	1
Endrin aldehyde	0.0050	U M	0.025	0.0050	0.0031	ug/L		10/17/19 16:06	1
Endrin ketone	0.0050	U M	0.025	0.0050	0.0023	ug/L		10/17/19 16:06	1
gamma-BHC (Lindane)	0.0050	U	0.025	0.0050	0.0018	ug/L		10/17/19 16:06	1
Heptachlor	0.0090	U M	0.025	0.0090	0.0036	ug/L		10/17/19 16:06	1
Heptachlor epoxide	0.0050	U	0.025	0.0050	0.0019	ug/L		10/17/19 16:06	1
Methoxychlor	0.0090	U	0.025	0.0090	0.0049	ug/L		10/17/19 16:06	1
PCB-1016	0.18	U M	0.50	0.18	0.090	ug/L		10/17/19 16:06	1
PCB-1221	0.17	U	0.50	0.17	0.095	ug/L		10/17/19 16:06	1
PCB-1232	0.23	U M	0.50	0.23	0.13	ug/L		10/17/19 16:06	1
PCB-1242	0.23	U M	0.50	0.23	0.095	ug/L		10/17/19 16:06	1
PCB-1248	0.23	U M	0.50	0.23	0.11	ug/L		10/17/19 16:06	1
PCB-1254	0.17	U M	0.50	0.17	0.055	ug/L		10/17/19 16:06	1
PCB-1260	0.18	U	0.50	0.18	0.060	ug/L		10/17/19 16:06	1
Toxaphene	0.40	U M	2.5	0.40	0.20	ug/L		10/17/19 16:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*57*		*14 - 130*	*10/14/19 17:13*	*10/17/19 16:06*	*1*
Tetrachloro-m-xylene	*78*		*44 - 124*	*10/14/19 17:13*	*10/17/19 16:06*	*1*

Lab Sample ID: LCS 680-590838/23-A
Matrix: Water
Analysis Batch: 591514

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 590838

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.0500	0.0399		ug/L		80	45 - 134
alpha-BHC	0.0500	0.0473		ug/L		95	54 - 138
beta-BHC	0.0500	0.0507		ug/L		101	56 - 136
4,4'-DDD	0.0500	0.0494		ug/L		99	56 - 143
4,4'-DDE	0.0500	0.0500		ug/L		100	57 - 135
4,4'-DDT	0.0500	0.0540		ug/L		108	51 - 143
delta-BHC	0.0500	0.0481		ug/L		96	52 - 142
Dieldrin	0.0500	0.0494		ug/L		99	60 - 136
Endosulfan I	0.0500	0.0419		ug/L		84	62 - 126
Endosulfan II	0.0500	0.0528		ug/L		106	52 - 135
Endosulfan sulfate	0.0500	0.0487		ug/L		97	62 - 133

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCS 680-590838/23-A
Matrix: Water
Analysis Batch: 591514

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 590838

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Endrin			0.0500	0.0580		ug/L		116	60 - 138		
Endrin aldehyde			0.0500	0.0517		ug/L		103	51 - 132		
Endrin ketone			0.0500	0.0507		ug/L		101	58 - 134		
gamma-BHC (Lindane)			0.0500	0.0472		ug/L		94	59 - 134		
Heptachlor			0.0500	0.0427		ug/L		85	54 - 130		
Heptachlor epoxide			0.0500	0.0466		ug/L		93	61 - 133		
Methoxychlor			0.0500	0.0590		ug/L		118	54 - 145		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*90*		*14 - 130*
Tetrachloro-m-xylene	*72*		*44 - 124*

Lab Sample ID: LCS 680-590838/27-A
Matrix: Water
Analysis Batch: 591514

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 590838

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-1016			3.00	3.03		ug/L		101	46 - 129		
PCB-1260			3.00	3.06		ug/L		102	45 - 134		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*74*		*14 - 130*
Tetrachloro-m-xylene	*74*		*44 - 124*

Lab Sample ID: LCSD 680-590838/24-A
Matrix: Water
Analysis Batch: 591514

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 590838

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin			0.0500	0.0365		ug/L		73	45 - 134	9	30
alpha-BHC			0.0500	0.0446		ug/L		89	54 - 138	6	30
beta-BHC			0.0500	0.0557		ug/L		111	56 - 136	9	30
4,4'-DDD			0.0500	0.0516		ug/L		103	56 - 143	4	30
4,4'-DDE			0.0500	0.0523		ug/L		105	57 - 135	4	30
4,4'-DDT			0.0500	0.0576		ug/L		115	51 - 143	6	30
delta-BHC			0.0500	0.0503		ug/L		101	52 - 142	5	30
Dieldrin			0.0500	0.0498		ug/L		100	60 - 136	1	30
Endosulfan I			0.0500	0.0422		ug/L		84	62 - 126	1	30
Endosulfan II			0.0500	0.0522		ug/L		104	52 - 135	1	30
Endosulfan sulfate			0.0500	0.0499		ug/L		100	62 - 133	2	30
Endrin			0.0500	0.0574		ug/L		115	60 - 138	1	30
Endrin aldehyde			0.0500	0.0556		ug/L		111	51 - 132	7	30
Endrin ketone			0.0500	0.0523		ug/L		105	58 - 134	3	30
gamma-BHC (Lindane)			0.0500	0.0456		ug/L		91	59 - 134	4	30
Heptachlor			0.0500	0.0397		ug/L		79	54 - 130	7	30
Heptachlor epoxide			0.0500	0.0455		ug/L		91	61 - 133	2	30
Methoxychlor			0.0500	0.0596		ug/L		119	54 - 145	1	30

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCSD 680-590838/24-A
Matrix: Water
Analysis Batch: 591514

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 590838

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*75*		*14 - 130*
Tetrachloro-m-xylene	*68*		*44 - 124*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 680-591529/2
Matrix: Water
Analysis Batch: 591529

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	0.50	U	0.50	0.50	0.20	mg/L		10/17/19 11:35	1
Sulfate	1.0	U M	1.0	1.0	0.40	mg/L		10/17/19 11:35	1

Lab Sample ID: LCS 680-591529/3
Matrix: Water
Analysis Batch: 591529

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.0		mg/L		100	87 - 111
Sulfate	10.0	10.4		mg/L		104	87 - 112

Lab Sample ID: LCSD 680-591529/4
Matrix: Water
Analysis Batch: 591529

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	10.0		mg/L		100	87 - 111	0	15
Sulfate	10.0	10.3		mg/L		103	87 - 112	1	15

Lab Sample ID: MB 680-591748/2
Matrix: Water
Analysis Batch: 591748

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chloride	0.50	U M	0.50	0.50	0.20	mg/L		10/18/19 10:02	1
Sulfate	1.0	U M	1.0	1.0	0.40	mg/L		10/18/19 10:02	1

Lab Sample ID: LCS 680-591748/3
Matrix: Water
Analysis Batch: 591748

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.0		mg/L		100	87 - 111
Sulfate	10.0	9.94		mg/L		99	87 - 112

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 680-591748/4
Matrix: Water
Analysis Batch: 591748

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	10.0	10.0		mg/L		100	87 - 111	0	15
Sulfate	10.0	10.1		mg/L		101	87 - 112	1	15

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-590767/1-A
Matrix: Water
Analysis Batch: 591674

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 590767

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	5.0	U	10	5.0	1.7	ug/L		10/17/19 19:52	1
Cadmium	3.0	U	5.0	3.0	1.0	ug/L		10/17/19 19:52	1
Chromium	4.0	U	10	4.0	1.6	ug/L		10/17/19 19:52	1
Copper	5.0	U	20	5.0	1.8	ug/L		10/17/19 19:52	1
Iron	50	U	50	50	17	ug/L		10/17/19 19:52	1
Lead	10	U	10	10	3.9	ug/L		10/17/19 19:52	1
Manganese	3.0	U	10	3.0	1.0	ug/L		10/17/19 19:52	1
Selenium	20	U	20	20	9.9	ug/L		10/17/19 19:52	1
Silver	1.5	U	10	1.5	0.60	ug/L		10/17/19 19:52	1

Lab Sample ID: LCS 680-590767/2-A
Matrix: Water
Analysis Batch: 591674

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 590767

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	100	105		ug/L		105	88 - 113
Cadmium	50.0	51.8		ug/L		104	88 - 113
Chromium	100	103		ug/L		103	90 - 113
Copper	100	108		ug/L		108	86 - 114
Iron	5010	5110		ug/L		102	87 - 115
Lead	505	501		ug/L		99	86 - 113
Manganese	400	410		ug/L		102	90 - 114
Selenium	100	107		ug/L		107	83 - 114
Silver	50.0	51.2		ug/L		102	84 - 115

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-590766/1-A
Matrix: Water
Analysis Batch: 591017

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 590766

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/14/19 22:47	1

Lab Sample ID: LCS 680-590766/2-A
Matrix: Water
Analysis Batch: 591017

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 590766

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	100	92.2		ug/L		92	84 - 116

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-590716/1-A
Matrix: Water
Analysis Batch: 590812

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 590716

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/14/19 02:42	1

Lab Sample ID: LCS 680-590716/2-A
Matrix: Water
Analysis Batch: 590812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 590716

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.50	2.67		ug/L		107	80 - 124

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 280-474710/23
Matrix: Water
Analysis Batch: 474710

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate/Nitrite-N	0.050	U	0.10	0.050	0.019	mg/L		10/17/19 18:48	1

Lab Sample ID: LCS 280-474710/21
Matrix: Water
Analysis Batch: 474710

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate/Nitrite-N	5.00	5.31		mg/L		106	90 - 110

Lab Sample ID: LCSD 280-474710/22
Matrix: Water
Analysis Batch: 474710

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate/Nitrite-N	5.00	5.45		mg/L		109	90 - 110	3	10

Method: 410.4 - COD

Lab Sample ID: MB 280-474087/5
Matrix: Water
Analysis Batch: 474087

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand	20	U	20	20	8.7	mg/L		10/15/19 12:24	1

Lab Sample ID: LCS 280-474087/3
Matrix: Water
Analysis Batch: 474087

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	100	94.9		mg/L		95	90 - 110

Method: 410.4 - COD (Continued)

Lab Sample ID: LCSD 280-474087/4
Matrix: Water
Analysis Batch: 474087

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand			100	100		mg/L		100	90 - 110	5	11

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-592328/3-A
Matrix: Water
Analysis Batch: 592404

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 592328

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		10/22/19 15:54	1

Lab Sample ID: LCS 680-592328/4-A
Matrix: Water
Analysis Batch: 592404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 592328

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total			0.0500	0.0499		mg/L		100	83 - 116

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-474863/6
Matrix: Water
Analysis Batch: 474863

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Alkalinity	10	U	10	10	3.1	mg/L		10/21/19 17:47	1

Lab Sample ID: LCS 280-474863/4
Matrix: Water
Analysis Batch: 474863

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity			200	202		mg/L		101	89 - 109

Lab Sample ID: LCSD 280-474863/5
Matrix: Water
Analysis Batch: 474863

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity			200	203		mg/L		101	89 - 109	0	10

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-474067/1
Matrix: Water
Analysis Batch: 474067

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	10	U	10	10	4.7	mg/L		10/15/19 10:33	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 280-474067/2
Matrix: Water
Analysis Batch: 474067

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	501	482		mg/L		96	93 - 110

Lab Sample ID: LCSD 280-474067/3
Matrix: Water
Analysis Batch: 474067

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	501	488		mg/L		97	93 - 110	1	20

GC Semi VOA

Prep Batch: 590838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	3520C	
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	3520C	
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	3520C	
MB 680-590838/22-A	Method Blank	Total/NA	Water	3520C	
LCS 680-590838/23-A	Lab Control Sample	Total/NA	Water	3520C	
LCS 680-590838/27-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-590838/24-A	Lab Control Sample Dup	Total/NA	Water	3520C	

Analysis Batch: 591514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 680-590838/22-A	Method Blank	Total/NA	Water	8081B 8082A	590838
LCS 680-590838/23-A	Lab Control Sample	Total/NA	Water	8081B 8082A	590838
LCS 680-590838/27-A	Lab Control Sample	Total/NA	Water	8081B 8082A	590838
LCSD 680-590838/24-A	Lab Control Sample Dup	Total/NA	Water	8081B 8082A	590838

Analysis Batch: 591712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	8081B 8082A	590838
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	8081B 8082A	590838
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	8081B 8082A	590838

HPLC/IC

Analysis Batch: 591529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	9056A	
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	9056A	
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	9056A	
MB 680-591529/2	Method Blank	Total/NA	Water	9056A	
LCS 680-591529/3	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-591529/4	Lab Control Sample Dup	Total/NA	Water	9056A	

Analysis Batch: 591748

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1 - DL	LFM-99-05A_FAL19	Total/NA	WG	9056A	
680-175305-2 - DL	LFM-DUP01_FAL19	Total/NA	WG	9056A	
680-175305-3 - DL	LFM-99-06ARP_FAL19	Total/NA	WG	9056A	
MB 680-591748/2	Method Blank	Total/NA	Water	9056A	
LCS 680-591748/3	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-591748/4	Lab Control Sample Dup	Total/NA	Water	9056A	

Metals

Prep Batch: 590716

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	7470A	
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	7470A	
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	7470A	
MB 680-590716/1-A	Method Blank	Total/NA	Water	7470A	
LCS 680-590716/2-A	Lab Control Sample	Total/NA	Water	7470A	

Metals

Prep Batch: 590766

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	3010A	
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	3010A	
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	3010A	
MB 680-590766/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-590766/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 590767

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	3010A	
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	3010A	
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	3010A	
MB 680-590767/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-590767/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 590812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	7470A	590716
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	7470A	590716
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	7470A	590716
MB 680-590716/1-A	Method Blank	Total/NA	Water	7470A	590716
LCS 680-590716/2-A	Lab Control Sample	Total/NA	Water	7470A	590716

Analysis Batch: 591017

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	6020A	590766
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	6020A	590766
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	6020A	590766
MB 680-590766/1-A	Method Blank	Total/NA	Water	6020A	590766
LCS 680-590766/2-A	Lab Control Sample	Total/NA	Water	6020A	590766

Analysis Batch: 591674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	6010C	590767
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	6010C	590767
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	6010C	590767
MB 680-590767/1-A	Method Blank	Total/NA	Water	6010C	590767
LCS 680-590767/2-A	Lab Control Sample	Total/NA	Water	6010C	590767

General Chemistry

Analysis Batch: 474067

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	SM 2540C	
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	SM 2540C	
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	SM 2540C	
MB 280-474067/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-474067/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-474067/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

General Chemistry

Analysis Batch: 474087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	410.4	
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	410.4	
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	410.4	
MB 280-474087/5	Method Blank	Total/NA	Water	410.4	
LCS 280-474087/3	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-474087/4	Lab Control Sample Dup	Total/NA	Water	410.4	

Analysis Batch: 474710

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	353.2	
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	353.2	
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	353.2	
MB 280-474710/23	Method Blank	Total/NA	Water	353.2	
LCS 280-474710/21	Lab Control Sample	Total/NA	Water	353.2	
LCSD 280-474710/22	Lab Control Sample Dup	Total/NA	Water	353.2	

Analysis Batch: 474863

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	SM 2320B	
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	SM 2320B	
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	SM 2320B	
MB 280-474863/6	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-474863/4	Lab Control Sample	Total/NA	Water	SM 2320B	
LCSD 280-474863/5	Lab Control Sample Dup	Total/NA	Water	SM 2320B	

Prep Batch: 592328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	9012B	
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	9012B	
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	9012B	
MB 680-592328/3-A	Method Blank	Total/NA	Water	9012B	
LCS 680-592328/4-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 592404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175305-1	LFM-99-05A_FAL19	Total/NA	WG	9012B	592328
680-175305-2	LFM-DUP01_FAL19	Total/NA	WG	9012B	592328
680-175305-3	LFM-99-06ARP_FAL19	Total/NA	WG	9012B	592328
MB 680-592328/3-A	Method Blank	Total/NA	Water	9012B	592328
LCS 680-592328/4-A	Lab Control Sample	Total/NA	Water	9012B	592328

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/DCL Fall 2019

Job ID: 680-175305-1

Client Sample ID: LFM-99-05A_FAL19

Lab Sample ID: 680-175305-1

Date Collected: 10/08/19 09:45

Matrix: WG

Date Received: 10/11/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			985 mL	5 mL	590838	10/14/19 17:13	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			591712	10/18/19 18:35	JCK	TAL SAV
	Instrument ID: CSGAA									
Total/NA	Analysis	9056A		1	5 mL	5 mL	591529	10/17/19 15:10	UI	TAL SAV
	Instrument ID: CICK									
Total/NA	Analysis	9056A	DL	5	5 mL	5 mL	591748	10/18/19 19:26	UI	TAL SAV
	Instrument ID: CICK									
Total/NA	Prep	3010A			50 mL	50 mL	590767	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6010C		1			591674	10/17/19 20:52	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	590766	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6020A		1			591017	10/14/19 23:57	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	590716	10/13/19 17:47	DB	TAL SAV
Total/NA	Analysis	7470A		1			590812	10/14/19 03:35	DB	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	474710	10/17/19 19:55	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	474087	10/15/19 12:24	SGB	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	592328	10/22/19 13:20	JER	TAL SAV
Total/NA	Analysis	9012B		1	6 mL	6 mL	592404	10/22/19 16:10	JER	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			474863	10/21/19 18:19	SPG	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	474067	10/15/19 10:33	ECL	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-DUP01_FAL19

Lab Sample ID: 680-175305-2

Date Collected: 10/08/19 09:50

Matrix: WG

Date Received: 10/11/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			971.6 mL	5 mL	590838	10/14/19 17:13	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			591712	10/18/19 18:49	JCK	TAL SAV
	Instrument ID: CSGAA									
Total/NA	Analysis	9056A		1	5 mL	5 mL	591529	10/17/19 15:22	UI	TAL SAV
	Instrument ID: CICK									
Total/NA	Analysis	9056A	DL	5	5 mL	5 mL	591748	10/18/19 19:39	UI	TAL SAV
	Instrument ID: CICK									
Total/NA	Prep	3010A			50 mL	50 mL	590767	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6010C		1			591674	10/17/19 20:38	BCB	TAL SAV
	Instrument ID: ICPE									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/DCL Fall 2019

Job ID: 680-175305-1

Client Sample ID: LFM-DUP01_FAL19

Lab Sample ID: 680-175305-2

Date Collected: 10/08/19 09:50

Matrix: WG

Date Received: 10/11/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			50 mL	250 mL	590766	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6020A		1			591017	10/14/19 23:42	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	590716	10/13/19 17:47	DB	TAL SAV
Total/NA	Analysis	7470A		1			590812	10/14/19 03:38	DB	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	474710	10/17/19 19:57	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	474087	10/15/19 12:24	SGB	TAL DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	592328	10/22/19 13:20	JER	TAL SAV
Total/NA	Analysis	9012B		1	6 mL	6 mL	592404	10/22/19 16:10	JER	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			474863	10/21/19 18:24	SPG	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	474067	10/15/19 10:33	ECL	TAL DEN
	Instrument ID: NOEQUIP									

Client Sample ID: LFM-99-06ARP_FAL19

Lab Sample ID: 680-175305-3

Date Collected: 10/08/19 12:00

Matrix: WG

Date Received: 10/11/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			981.8 mL	5 mL	590838	10/14/19 17:13	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			591712	10/18/19 19:04	JCK	TAL SAV
	Instrument ID: CSGAA									
Total/NA	Analysis	9056A		1	5 mL	5 mL	591529	10/17/19 15:35	UI	TAL SAV
	Instrument ID: CICK									
Total/NA	Analysis	9056A	DL	5	5 mL	5 mL	591748	10/18/19 19:52	UI	TAL SAV
	Instrument ID: CICK									
Total/NA	Prep	3010A			50 mL	50 mL	590767	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6010C		1			591674	10/17/19 20:47	BCB	TAL SAV
	Instrument ID: ICPE									
Total/NA	Prep	3010A			50 mL	250 mL	590766	10/14/19 09:29	AJR	TAL SAV
Total/NA	Analysis	6020A		1			591017	10/14/19 23:53	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	590716	10/13/19 17:47	DB	TAL SAV
Total/NA	Analysis	7470A		1			590812	10/14/19 03:42	DB	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Analysis	353.2		1	100 mL	100 mL	474710	10/17/19 19:59	SVC	TAL DEN
	Instrument ID: WC_Alp 2									
Total/NA	Analysis	410.4		1	2 mL	2 mL	474087	10/15/19 12:24	SGB	TAL DEN
	Instrument ID: WC_Genesys20									

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM/DCL Fall 2019

Job ID: 680-175305-1

Client Sample ID: LFM-99-06ARP_FAL19

Date Collected: 10/08/19 12:00
Date Received: 10/11/19 09:10

Lab Sample ID: 680-175305-3

Matrix: WG

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	9012B			6 mL	6 mL	592328	10/22/19 13:20	JER	TAL SAV
Total/NA	Analysis	9012B		1	6 mL	6 mL	592404	10/22/19 16:10	JER	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	SM 2320B		1			474863	10/21/19 18:30	SPG	TAL DEN
	Instrument ID: WC-AT3									
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	474067	10/15/19 10:33	ECL	TAL DEN
	Instrument ID: NOEQUIP									

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

MassDEP Analytical Protocol Certification Form

Laboratory Name: Katahdin Analytical Services, LLC. Project #:

Project Location: Fort Devens RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
TM0708-1, 2, 3 & 4

Matrices: X Groundwater/Surface Water Soil/Sediment Drinking Water Air Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A ✓	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B ✓	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	(Yes) No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	(Yes) No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	(Yes) No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	(Yes) No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	(Yes) No (Yes) No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	(Yes) No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	(Yes) No[1]

***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (No[1])
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	(Yes) No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Leslie Dimond **Position:** Q.A. Officer

Printed Name: Leslie Dimond **Date:** 11/11/2019

TEST AMERICA SAVANNAH
LONG TERM MONITORING,
DCL FALL 2019
TM0708

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
LONG TERM MONITORING, DCL FALL 2019
TM0708

Sample Receipt

The following samples were received on October 11, 2019 and were logged in under Katahdin Analytical Services work order number TM0708 for a hardcopy due date of October 30, 2019.

KATAHDIN Sample No.	TEST AMERICA SAVANNAH Sample Identification
TM0708-1	LFM-99-05A_FAL19
TM0708-2	LFM-DUP01_FAL19
TM0708-3	LFM-99-06ARP_FAL19
TM0708-4	TRIPBLANK2_100819

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order # TM0708 were analyzed in accordance with Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MADEP, May 2004, Revision 1.1, and/or Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MADEP, May 2004, Revision 1.1, and/or for the specific methods listed below or on the Report of Analysis.

MA-VPH Analysis

Sample TM0708-4 was manually integrated for the target analyte naphthalene on the PID. The specific reason for the manual integration is indicated on the raw data by the manual integration codes (M1-M11). These codes are further explained in the attachment following this narrative.

The target analyte naphthalene was detected below ½ the LOQ in the method blank WG264149-1. According to the DoD QSM, a method blank is considered to be contaminated if the concentration of any target analyte in the blank exceeds ½ the reporting limit and is greater than 1/10 the amount measured in any sample, or 1/10 the regulatory limit (whichever is greater). Since the method blank was acceptable, no further action was taken.

The opening calibration verification standard (CV) (file 2MJ10099) had a low response for the surrogate 2,5-dibromotoluene on the PID that resulted in a %D that exceeded the method acceptance limits of ± 25%. Since the target analyte and range responses were acceptable, no further action was taken.

MA-EPH Analysis

There were no protocol deviations or observations noted by the organics laboratory staff for this analysis.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

12-7-19

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC. Sample Receipt Condition Report

Client: Koman	KAS PM: [illegible]	Sampled By: Client	
Project:	KIMS Entry By: SLS	Delivered By: Fedex	
KAS Work Order#: TM0708 / 0709	KIMS Review By: [illegible]	Received By: JCB	
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 10.11.19 0945	

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?					
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?					
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.					Temp (°C): 0.8 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓				
Soil/Sediment: Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

TM0708

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # DCL_FAL19

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, DCL Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number, insert	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2 x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6°C
4	2 x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6°C

	Sample ID	Matrix	Date	Time	Samp Init.	MADEPEP - EPH with PAHs	MADEPVP - VPH with targets	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
	Event: KOMAN, Long Term Monitoring, DCL Fall 2019					2	4						
1	~~LFM-03-07_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-03-07~~	~~N1~~	~~10.90~~	~~20.90~~		1
2	~~LFM-99-02B_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-99-02B~~	~~N1~~	~~14.50~~	~~25.83~~		1
3	LFM-99-05A_FAL19	WG	10/8/19	0945	B/A	X	X	LFM-99-05A	N1	19.00	29.98		1
4	LFM-DUP01_FAL19	WG	10/8/19	0950	B/A	X	X	LFM-99-05A	FD1	19.00	29.98		1
5	LFM-99-06ARP_FAL19	WG	10/8/19	1200	B/A	X	X	LFM-99-06ARP	N1	10.09	19.39		1
6	~~LFM-~~												
7	TripBlank2_100819	WQ	10/8/19		B/A		X	Trip Blank	TB				
8													
9													
10													
		Turnaround Time: 21 Days											

Relinquished by: *(Signature)*	Date	Time
	10/9/19	1450
	10/10/19	0707

Received by: *(Signature)*	Date	Time
	10/9/19	MST

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

10.1.19 0945 0.8°C

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Oct. 15, 2019
08:44 AM

Login Number: TM0708

Account: TASAV001 NoWeb
Test America Savannah

Project: TASAV-DEVENS

Quote/Incoming:

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 5.1 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative. VPH undetect ethylbenzene, see work order SL3114.
CHECK NO.	:	
CLIENT PO#		
CLIENT PROJECT MANAGE	:	Laurie Ekes
CONTRACT	:	
COOLER TEMPERATURE	:	0.8
DELIVERY SERVICES	:	FedEx
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS	:	JCB
PM	:	HHM
PROJECT NAME	:	Long Term Monitoring, DCL Fall 2019
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF, EDD and invoice to Jerry. No HC.

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM0708-1	LFM-99-05A_FAL19	08-OCT-19 09:45	11-OCT-19			30-OCT-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	22-OCT-19	1L N-Amber Glass		
Aqueous	S	MA-VPH	22-OCT-19	40mL Vial+HCl		

TM0708-2	LFM-DUP01_FAL19	08-OCT-19 09:50	11-OCT-19			30-OCT-19

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	22-OCT-19	1L N-Amber Glass		
Aqueous	S	MA-VPH	22-OCT-19	40mL Vial+HCl		

TM0708-3	LFM-99-06ARP_FAL19	08-OCT-19 12:00	11-OCT-19			30-OCT-19

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-EPH	22-OCT-19	1L N-Amber Glass		
Aqueous	S	MA-VPH	22-OCT-19	40mL Vial+HCl		

TM0708-4	TRIPBLANK2_100819	08-OCT-19 00:00	11-OCT-19			30-OCT-19

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	MA-VPH	22-OCT-19	40mL Vial+HCl		

Total Samples: 4 ***Total Analyses: 7***

10/15/19

SAMPLE DATA SUMMARY PACKAGE

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The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U — Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* — Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D — Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E — Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J — Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J — Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B — Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C — Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L — Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M — Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N — Presumptive evidence of a compound based on a mass spectral library search.

A — Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P — Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0708-1
Client ID: LFM-99-05A_FAL19
Project: Long Term Monitoring, DCL Fall 2019
SDG: TM0708
Lab File ID: CMJ2171.D

Sample Date: 08-OCT-19
Received Date: 11-OCT-19
Extract Date: 13-OCT-19
Extracted By: AC
Extraction Method: SW846 3510C
Lab Prep Batch: WG263992

Analysis Date: 16-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 06-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	52.	78.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	52.	78.
C11-C22 Aromatics	U	100	ug/L	1	100	100	52.	78.
Naphthalene	U	2.1	ug/L	1	2	2.1	0.94	1.6
2-Methylnaphthalene	U	2.1	ug/L	1	2	2.1	0.83	1.6
Phenanthrene	U	2.1	ug/L	1	2	2.1	0.94	1.6
Acenaphthylene	U	2.1	ug/L	1	2	2.1	0.83	1.6
Acenaphthene	U	2.1	ug/L	1	2	2.1	1.9	2.0
Anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(a)anthracene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(a)pyrene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(b)fluoranthene	U	2.1	ug/L	1	2	2.1	0.83	1.6
Benzo(g,h,i)perylene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Benzo(k)fluoranthene	U	2.1	ug/L	1	2	2.1	1.0	1.6
Chrysene	U	2.1	ug/L	1	2	2.1	0.94	1.6
Dibenzo(a,h)anthracene	U	2.1	ug/L	1	2	2.1	1.2	1.6
Fluoranthene	U	2.1	ug/L	1	2	2.1	0.83	1.6
Fluorene	U	2.1	ug/L	1	2	2.1	0.94	1.6
Indeno(1,2,3-cd)pyrene	U	2.1	ug/L	1	2	2.1	1.4	1.6
Pyrene	U	2.1	ug/L	1	2	2.1	1.1	1.6
5-Alpha Androstane		49.6	%					
o-Terphenyl		79.0	%					
2-Fluorobiphenyl		88.9	%					
2-Bromonaphthalene		86.6	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0708-2
Client ID: LFM-DUP01_FAL19
Project: Long Term Monitoring, DCL Fall 2019
SDG: TM0708
Lab File ID: CMJ2172.D

Sample Date: 08-OCT-19
Received Date: 11-OCT-19
Extract Date: 13-OCT-19
Extracted By: AC
Extraction Method: SW846 3510C
Lab Prep Batch: WG263992

Analysis Date: 16-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 06-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	98	ug/L	1	100	98.	49.	74.
C19-C36 Aliphatics	U	98	ug/L	1	100	98.	49.	74.
C11-C22 Aromatics	U	98	ug/L	1	100	98.	49.	74.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.88	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	0.98	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.78	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.88	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		46.9	%					
o-Terphenyl		85.1	%					
2-Fluorobiphenyl		54.6	%					
2-Bromonaphthalene		55.0	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0708-3
Client ID: LFM-99-06ARP_FAL19
Project: Long Term Monitoring, DCL Fall 2019
SDG: TM0708
Lab File ID: CMJ2173.D

Sample Date: 08-OCT-19
Received Date: 11-OCT-19
Extract Date: 13-OCT-19
Extracted By: AC
Extraction Method: SW846 3510C
Lab Prep Batch: WG263992

Analysis Date: 16-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 06-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	95	ug/L	1	100	95.	48.	71.
C19-C36 Aliphatics	U	95	ug/L	1	100	95.	48.	71.
C11-C22 Aromatics	U	95	ug/L	1	100	95.	48.	71.
Naphthalene	U	1.9	ug/L	1	2	1.9	0.86	1.4
2-Methylnaphthalene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Phenanthrene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Acenaphthylene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Acenaphthene	U	1.9	ug/L	1	2	1.9	1.7	1.8
Anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)anthracene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Benzo(a)pyrene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(b)fluoranthene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Benzo(g,h,i)perylene	U	1.9	ug/L	1	2	1.9	1.2	1.4
Benzo(k)fluoranthene	U	1.9	ug/L	1	2	1.9	0.95	1.4
Chrysene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Dibenzo(a,h)anthracene	U	1.9	ug/L	1	2	1.9	1.1	1.4
Fluoranthene	U	1.9	ug/L	1	2	1.9	0.76	1.4
Fluorene	U	1.9	ug/L	1	2	1.9	0.86	1.4
Indeno(1,2,3-cd)pyrene	U	1.9	ug/L	1	2	1.9	1.3	1.4
Pyrene	U	1.9	ug/L	1	2	1.9	1.0	1.4
5-Alpha Androstane		47.1	%					
o-Terphenyl		60.3	%					
2-Fluorobiphenyl		65.9	%					
2-Bromonaphthalene		60.9	%					

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Report of Analytical Results

Client:
Lab ID: WG263992-1RA
Client ID: Method Blank Sample
Project:
SDG: TM0708
Lab File ID: CMJ2264.D

Sample Date:
Received Date:
Extract Date: 13-OCT-19
Extracted By: AC
Extraction Method: SW846 3510C
Lab Prep Batch: WG263992

Analysis Date: 22-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 06-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C9-C18 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C19-C36 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C11-C22 Aromatics	U	100	ug/L	1	100	100	50.	75.
Naphthalene	U	2.0	ug/L	1	2	2.0	0.90	1.5
2-Methylnaphthalene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Phenanthrene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Acenaphthylene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Acenaphthene	U	2.0	ug/L	1	2	2.0	1.8	1.9
Anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)anthracene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Benzo(a)pyrene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(b)fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Benzo(g,h,i)perylene	U	2.0	ug/L	1	2	2.0	1.3	1.5
Benzo(k)fluoranthene	U	2.0	ug/L	1	2	2.0	1.0	1.5
Chrysene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Dibenzo(a,h)anthracene	U	2.0	ug/L	1	2	2.0	1.2	1.5
Fluoranthene	U	2.0	ug/L	1	2	2.0	0.80	1.5
Fluorene	U	2.0	ug/L	1	2	2.0	0.90	1.5
Indeno(1,2,3-cd)pyrene	U	2.0	ug/L	1	2	2.0	1.4	1.5
Pyrene	U	2.0	ug/L	1	2	2.0	1.1	1.5
5-Alpha Androstane		52.2	%					
o-Terphenyl		66.6	%					
2-Fluorobiphenyl		55.3	%					
2-Bromonaphthalene		48.4	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Long Term Monitoring, DCL Fall 2019 **Matrix:** AQ
Lab Code: KAS **SDG:** TM0708

Client Sample ID	Lab Sample ID	Col. ID	2BN	#	2FBP	#	5AA	#	OTP	#
LFM-99-05A_FAL19	TM0708-1	B	86.6		88.9		49.6		79.0	
LFM-DUP01_FAL19	TM0708-2	B	55.0		54.6		46.9		85.1	
LFM-99-06ARP_FAL19	TM0708-3	B	60.9		65.9		47.1		60.3	
Method Blank Sample	WG263992-1RA	B	48.4		55.3		52.2		66.6	
Laboratory Control S	WG263992-2RA	B	57.9		58.4		49.8		58.3	
Laboratory Control S	WG263992-3RA	B	78.4		78.8		52.2		76.2	

		QC Limits
5AA	5-ALPHA ANDROSTANE	40-140
OTP	O-TERPHENYL	40-140
2FBP	2-FLUOROBIPHENYL	40-140
2BN	2-BROMONAPHTHALENE	40-140

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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LCS/LCSD Recovery Report

LCS ID: WG263992-2RA
LCSD ID: WG263992-3RA
Project:
SDG: TM0708
Report Date: 06-NOV-19
LCS File ID: CMJ2265.D

Received Date:
Extract Date: 13-OCT-19
Extracted By: AC
Extraction Method: SW846 3510C
Lab Prep Batch: WG263992
LCSD File ID: CMJ1266a.d

Analysis Date: 22-OCT-19
Analyst: AAB
Analysis Method: MA DEP EPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Unadjusted C11-C22 Aromatics	1530	919.	60.1	1190	77.8	ug/L	26*	25	40-140
C9-C18 Aliphatics	540.	301.	55.7	302.	55.9	ug/L	0	25	40-140
C19-C36 Aliphatics	720.	533.	74.0	545.	75.7	ug/L	2	25	40-140
Naphthalene	90.0	46.2	51.3	58.5	65.0	ug/L	23	25	40-140
2-Methylnaphthalene	90.0	47.9	53.2	60.6	67.3	ug/L	23	25	40-140
Phenanthrene	90.0	52.6	58.4	69.5	77.2	ug/L	28*	25	40-140
Acenaphthylene	90.0	46.4	51.6	59.9	66.6	ug/L	25*	25	40-140
Acenaphthene	90.0	48.3	53.7	62.4	69.3	ug/L	25*	25	40-140
Anthracene	90.0	52.2	58.0	68.7	76.3	ug/L	27*	25	40-140
Benzo(a)anthracene	90.0	54.4	60.4	70.7	78.6	ug/L	26*	25	40-140
Benzo(a)pyrene	90.0	53.2	59.1	69.1	76.8	ug/L	26*	25	40-140
Benzo(b)fluoranthene	90.0	59.6	66.2	73.1	81.2	ug/L	20	25	40-140
Benzo(g,h,i)perylene	90.0	58.6	65.1	76.6	85.1	ug/L	27*	25	40-140
Benzo(k)fluoranthene	90.0	53.6	59.6	74.0	82.2	ug/L	32*	25	40-140
Chrysene	90.0	56.4	62.7	73.7	81.9	ug/L	26*	25	40-140
Dibenzo(a,h)anthracene	90.0	55.9	62.1	70.3	78.1	ug/L	23	25	40-140
Fluoranthene	90.0	55.0	61.1	72.2	80.2	ug/L	27*	25	40-140
Fluorene	90.0	48.4	53.8	63.4	70.4	ug/L	27*	25	40-140
Indeno(1,2,3-cd)pyrene	90.0	53.5	59.4	71.0	78.9	ug/L	28*	25	40-140
Pyrene	90.0	53.9	59.9	71.1	79.0	ug/L	28*	25	40-140
5-Alpha Androstane			49.8		52.2				40-140
o-Terphenyl			58.3		76.2				40-140
2-Fluorobiphenyl			58.4		78.8				40-140
2-Bromonaphthalene			57.9		78.4				40-140

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fall 2019
Lab File ID : CMJ1156.D
Instrument ID : GC12

SDG : TM0708
Lab Sample ID : WG263992-1
Date Analyzed : 15-OCT-19
Time Analyzed : 18:21
Date Extracted : 13-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
LFM-99-05A_FAL19	TM0708-1	CMJ1171.D	10/16/19	05:46
LFM-DUP01_FAL19	TM0708-2	CMJ1172.D	10/16/19	06:32
LFM-99-06ARP_FAL19	TM0708-3	CMJ1173.D	10/16/19	07:18
Laboratory Control S	WG263992-2RA	CMJ1265.D	10/22/19	20:15
Laboratory Control S	WG263992-3RA	CMJ1266.D	10/22/19	21:01

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fall 2019
Lab File ID : CMJ1156A.D
Instrument ID : GC12

SDG : TM0708
Lab Sample ID : WG263992-1
Date Analyzed : 15-OCT-19
Time Analyzed : 18:21
Date Extracted : 15-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
LFM-99-05A_FAL19	TM0708-1	CMJ1171A	10/16/19	05:46
LFM-DUP01_FAL19	TM0708-2	CMJ1172A	10/16/19	06:32
LFM-99-06ARP_FAL19	TM0708-3	CMJ1173A	10/16/19	07:18
Laboratory Control S	WG263992-2RA	CMJ1265A	10/22/19	20:15
Laboratory Control S	WG263992-3RA	CMJ1266A	10/22/19	21:01

Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fall 2019
Lab File ID : CMJ2264.D
Instrument ID : GC12

SDG : TM0708
Lab Sample ID : WG263992-1RA
Date Analyzed : 22-OCT-19
Time Analyzed : 19:29
Date Extracted : 15-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
LFM-99-05A_FAL19	TM0708-1	CMJ2171.D	10/16/19	05:46
LFM-DUP01_FAL19	TM0708-2	CMJ2172.D	10/16/19	06:32
LFM-99-06ARP_FAL19	TM0708-3	CMJ2173.D	10/16/19	07:18
Laboratory Control S	WG263992-2RA	CMJ2265.D	10/22/19	20:15
Laboratory Control S	WG263992-3RA	CMJ2266.D	10/22/19	21:01

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0708
Project : Long Term Monitoring, DCL Fall 2019 **Instrument ID:** GC12
Lab File IDs : CMF1044.d CMF1043.d CMF1038.d CMF1037.d CMF1036.d **Calibration Date(s):** 13-JUN-19 14:19 14-JUN-19 11:54

	Level 1 1.0000	Level 2 10.0000	Level 3 50.0000	Level 4 100.0000	Level 5 200.0000		Crv New	b	m1	m2	%RSD	Max %RSD	
Unadjusted C11-C22 Aromatic	10121	7691	7743	9542	10604		AVG		9140		14.7979	25.00000	M
Naphthalene	10354	7818	7777	9552	10639		AVG		9228		14.7982	25.00000	O
2-Methylnaphthalene	10324	7724	7714	9542	10565		AVG		9173		15.0537	25.00000	O
Acenaphthylene	10068	7691	7723	9503	10607		AVG		9118		14.7633	25.00000	O
Acenaphthene	10199	7794	7858	9655	10780		AVG		9257		14.7562	25.00000	O
Fluorene	11209	7667	7690	9510	10542		AVG		9324		17.3677	25.00000	O
Phenanthrene	9881	7557	7635	9364	10490		AVG		8985		14.7998	25.00000	O
Anthracene	9921	7600	7663	9415	10563		AVG		9032		14.8586	25.00000	O
Fluoranthene	10212	7709	7726	9516	10645		AVG		9162		15.0473	25.00000	O
Pyrene	10446	7822	7859	9642	10786		AVG		9311		15.0931	25.00000	O
Benzo(a)Anthracene	10020	7658	7751	9512	10649		AVG		9118		14.8290	25.00000	O
Chrysene	10099	7686	7703	9443	10552		AVG		9097		14.7233	25.00000	O
Benzo(b)Fluoranthene	10946	8177	8753	10286	12160		AVG		10065		16.0967	25.00000	O
Benzo(k)Fluoranthene	9124	7366	6922	9041	9475		AVG		8386		13.7813	25.00000	O
Benzo(a)Pyrene	9883	7589	7636	9393	10520		AVG		9004		14.7936	25.00000	O
Indeno(1,2,3-cd)Pyrene	9859	8028	8262	10120	12414		AVG		9737		18.0983	25.00000	O
Dibenzo(a,h)Anthracene	10148	7614	7628	9663	8777		AVG		8766		13.1794	25.00000	O
Benzo(g,h,i)Perylene	9366	7247	7334	9057	10098		AVG		8620		14.7563	25.00000	O
2-Fluorobiphenyl	10513	7092	7065	8744	9779		AVG		8639		18.0206	25.00000	
2-Bromonaphthalene	7500	4848	4895	5995	6697		AVG		5987		19.1971	25.00000	
O-Terphenyl	10808	7564	7547	9330	10378		AVG		9125		16.7732	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0708
Project : Long Term Monitoring, DCL Fall 2019 **Instrument ID:** GC12
Lab File IDs : CMF2044.d CMF2043.d CMF2038.d CMF2037.d CMF2036.d **Calibration Date(s):** 13-JUN-19 14:19 14-JUN-19 11:54

	Level 1	Level 2	Level 3	Level 4	Level 5		Crv					Max	
	1.0000	10.0000	50.0000	100.0000	200.0000		New	b	m1	m2	%RSD	%RSD	
C9-C18 Aliphatic	8647	6935	6914	8335	8081		AVG		7782		10.3892	25.00000	M
C19-C36 Aliphatic	8474	6865	6928	8365	8100		AVG		7747		10.1706	25.00000	S O
C-9	8436	7020	6946	8385	8119		AVG		7781		9.50010	30.00000	O
C-10	8433	6977	6965	8422	8123		AVG		7784		9.66881	25.00000	O
C-12	8800	7031	6992	8427	8171		AVG		7884		10.4974	25.00000	O
C-14	8699	6875	6894	8278	8060		AVG		7761		10.7283	25.00000	O
C-16	8953	6985	6907	8366	8079		AVG		7858		11.3353	25.00000	O
C-18	8558	6724	6778	8136	7932		AVG		7625		10.8818	25.00000	O
C-19	9013	6965	6985	8461	8197		AVG		7924		11.5491	25.00000	O
C-20	8454	6889	6895	8356	8109		AVG		7741		10.1361	25.00000	O
C-22	8594	6925	6923	8362	8115		AVG		7784		10.3169	25.00000	O
C-24	8825	6932	6934	8355	8123		AVG		7834		10.9841	25.00000	O
C-26	8326	6886	6894	8315	8067		AVG		7697		9.67415	25.00000	O
C-28	8380	6907	6993	8425	8159		AVG		7773		9.75473	25.00000	O
C-30	8618	6924	6970	8421	8148		AVG		7816		10.3773	25.00000	O
C-36	7583	6496	6832	8223	7884		AVG		7404		9.75558	25.00000	O
5-alpha androstane	10008	7872	7740	9406	9123		AVG		8830		11.1987	25.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fal
Lab ID : WG264246-1
Lab File ID : CMJ1155.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0708
Analytical Date: 10/15/19 16:53
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	9990	0.010	8.26212	25.00000	Averaged
60	2-Methylnaphthalene	9173	9990	0.010	8.90401	25.00000	Averaged
70	Phenanthrene	8985	9904	0.010	10.22323	25.00000	Averaged
80	Acenaphthylene	9118	10041	0.010	10.11775	25.00000	Averaged
90	Acenaphthene	9257	10164	0.010	9.79242	25.00000	Averaged
100	Anthracene	9032	9608	0.010	6.37775	25.00000	Averaged
110	Benzo(a)Anthracene	9118	9755	0.010	6.99039	25.00000	Averaged
120	Benzo(a)Pyrene	9004	9751	0.010	8.28766	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	10293	0.010	2.26564	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	9169	0.010	6.36850	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	9893	0.010	17.97696	25.00000	Averaged
160	Chrysene	9097	9753	0.010	7.21164	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	8752	0.010	-0.15984	25.00000	Averaged
180	Fluoranthene	9162	10080	0.010	10.02332	25.00000	Averaged
190	Fluorene	9324	9908	0.010	6.26524	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	10166	0.010	4.40476	25.00000	Averaged
210	Pyrene	9311	10245	0.010	10.03412	25.00000	Averaged
4	2-Fluorobiphenyl	8639	9701	0.010	12.29775	25.00000	Averaged
6	2-Bromonaphthalene	5987	6496	0.010	8.49925	25.00000	Averaged
11	O-Terphenyl	9125	10180	0.010	11.55478	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fal
SDG: TM0708
Lab ID : WG264246-2
Analytical Date: 10/16/19 13:37
Lab File ID : CMJ1177.d
Instrument ID: GC12
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	9931	0.010	7.61800	25.00000	Averaged
60	2-Methylnaphthalene	9173	9885	0.010	7.75439	25.00000	Averaged
70	Phenanthrene	8985	9845	0.010	9.56704	25.00000	Averaged
80	Acenaphthylene	9118	9995	0.010	9.61195	25.00000	Averaged
90	Acenaphthene	9257	10135	0.010	9.47958	25.00000	Averaged
100	Anthracene	9032	9533	0.010	5.55026	25.00000	Averaged
110	Benzo(a)Anthracene	9118	9732	0.010	6.73266	25.00000	Averaged
120	Benzo(a)Pyrene	9004	9459	0.010	5.04963	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	10271	0.010	2.05599	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	8643	0.010	0.26365	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	9041	0.010	7.81528	25.00000	Averaged
160	Chrysene	9097	9773	0.010	7.43084	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	8726	0.010	-0.45599	25.00000	Averaged
180	Fluoranthene	9162	9981	0.010	8.94272	25.00000	Averaged
190	Fluorene	9324	9847	0.010	5.61378	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	10201	0.010	4.76381	25.00000	Averaged
210	Pyrene	9311	10188	0.010	9.41766	25.00000	Averaged
4	2-Fluorobiphenyl	8639	9615	0.010	11.30105	25.00000	Averaged
6	2-Bromonaphthalene	5987	6535	0.010	9.15402	25.00000	Averaged
11	O-Terphenyl	9125	10080	0.010	10.46549	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fal
Lab ID : WG264246-3
Lab File ID : CMJ2155.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0708
Analytical Date: 10/15/19 16:53
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	8465	0.010	8.77737	25.00000	Averaged
30	C19-C36 Aliphatic	7747	8645	0.010	11.60041	25.00000	Averaged
370	C-9	7781	8424	0.010	8.26485	30.00000	Averaged
380	C-10	7784	8509	0.010	9.31682	25.00000	Averaged
390	C-12	7884	8498	0.010	7.78294	25.00000	Averaged
400	C-14	7761	8475	0.010	9.19303	25.00000	Averaged
410	C-16	7858	8526	0.010	8.49830	25.00000	Averaged
420	C-18	7625	8361	0.010	9.64857	25.00000	Averaged
430	C-19	7924	8673	0.010	9.44995	25.00000	Averaged
440	C-20	7741	8545	0.010	10.39307	25.00000	Averaged
450	C-22	7784	8658	0.010	11.23766	25.00000	Averaged
460	C-24	7834	8719	0.010	11.29807	25.00000	Averaged
470	C-26	7697	8574	0.010	11.38231	25.00000	Averaged
480	C-28	7773	8692	0.010	11.82567	25.00000	Averaged
490	C-30	7816	8661	0.010	10.80184	25.00000	Averaged
500	C-36	7404	8640	0.010	16.70284	25.00000	Averaged
44	5-alpha androstane	8830	8531	0.010	-3.38041	25.00000	Averaged

*** = Compound out of QC criteria**

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fal
Lab ID : WG264246-4
Lab File ID : CMJ2177.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0708
Analytical Date: 10/16/19 13:37
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	8736	0.010	12.25950	25.00000	Averaged
30	C19-C36 Aliphatic	7747	8983	0.010	15.95733	25.00000	Averaged
370	C-9	7781	8653	0.010	11.20611	30.00000	Averaged
380	C-10	7784	8766	0.010	12.61998	25.00000	Averaged
390	C-12	7884	8766	0.010	11.18607	25.00000	Averaged
400	C-14	7761	8749	0.010	12.72732	25.00000	Averaged
410	C-16	7858	8813	0.010	12.15095	25.00000	Averaged
420	C-18	7625	8672	0.010	13.71783	25.00000	Averaged
430	C-19	7924	9007	0.010	13.66403	25.00000	Averaged
440	C-20	7741	8860	0.010	14.45816	25.00000	Averaged
450	C-22	7784	9055	0.010	16.33729	25.00000	Averaged
460	C-24	7834	8917	0.010	13.82635	25.00000	Averaged
470	C-26	7697	8924	0.010	15.93683	25.00000	Averaged
480	C-28	7773	8988	0.010	15.63351	25.00000	Averaged
490	C-30	7816	9087	0.010	16.25537	25.00000	Averaged
500	C-36	7404	9024	0.010	21.88414	25.00000	Averaged
44	5-alpha androstane	8830	8853	0.010	0.26527	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fal
Lab ID : WG264246-5
Lab File ID : CMJ1249b.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0708
Analytical Date: 10/22/19 08:10
Instrument ID: GC12
Column ID: A

	Compound	$\overline{RRF}$/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	8164	0.010	-11.52867	25.00000	Averaged
60	2-Methylnaphthalene	9173	8147	0.010	-11.19205	25.00000	Averaged
70	Phenanthrene	8985	7977	0.010	-11.21945	25.00000	Averaged
80	Acenaphthylene	9118	8124	0.010	-10.90791	25.00000	Averaged
90	Acenaphthene	9257	8264	0.010	-10.73120	25.00000	Averaged
100	Anthracene	9032	8024	0.010	-11.15802	25.00000	Averaged
110	Benzo(a)Anthracene	9118	8135	0.010	-10.77981	25.00000	Averaged
120	Benzo(a)Pyrene	9004	8002	0.010	-11.12738	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	8548	0.010	-15.06651	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	7723	0.010	-10.41477	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	7917	0.010	-5.59282	25.00000	Averaged
160	Chrysene	9097	8124	0.010	-10.69071	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	7670	0.010	-12.50387	25.00000	Averaged
180	Fluoranthene	9162	8127	0.010	-11.29739	25.00000	Averaged
190	Fluorene	9324	8047	0.010	-13.68828	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	8360	0.010	-14.14341	25.00000	Averaged
210	Pyrene	9311	8255	0.010	-11.34086	25.00000	Averaged
4	2-Fluorobiphenyl	8639	7589	0.010	-12.15021	25.00000	Averaged
6	2-Bromonaphthalene	5987	5215	0.010	-12.88825	25.00000	Averaged
11	O-Terphenyl	9125	8015	0.010	-12.16962	25.00000	Averaged

*** = Compound out of QC criteria**

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12/6/2019 (Rev 1)

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fal
SDG: TM0708
Lab ID : WG264246-6
Analytical Date: 10/23/19 06:33
Lab File ID : CMJ1269.d
Instrument ID: GC12
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
50	Naphthalene	9228	10017	0.010	8.54907	25.00000	Averaged
60	2-Methylnaphthalene	9173	10029	0.010	9.32523	25.00000	Averaged
70	Phenanthrene	8985	9874	0.010	9.89068	25.00000	Averaged
80	Acenaphthylene	9118	10015	0.010	9.82800	25.00000	Averaged
90	Acenaphthene	9257	10180	0.010	9.97368	25.00000	Averaged
100	Anthracene	9032	9924	0.010	9.87259	25.00000	Averaged
110	Benzo(a)Anthracene	9118	10079	0.010	10.54031	25.00000	Averaged
120	Benzo(a)Pyrene	9004	9980	0.010	10.83423	25.00000	Averaged
130	Benzo(b)Fluoranthene	10065	11042	0.010	9.71099	25.00000	Averaged
140	Benzo(g,h,i)Perylene	8620	9740	0.010	12.99188	25.00000	Averaged
150	Benzo(k)Fluoranthene	8386	9422	0.010	12.35795	25.00000	Averaged
160	Chrysene	9097	10025	0.010	10.20218	25.00000	Averaged
170	Dibenzo(a,h)Anthracene	8766	9490	0.010	8.26650	25.00000	Averaged
180	Fluoranthene	9162	10054	0.010	9.74477	25.00000	Averaged
190	Fluorene	9324	9953	0.010	6.75153	25.00000	Averaged
200	Indeno(1,2,3-cd)Pyrene	9737	10527	0.010	8.11854	25.00000	Averaged
210	Pyrene	9311	10230	0.010	9.86938	25.00000	Averaged
4	2-Fluorobiphenyl	8639	9334	0.010	8.05051	25.00000	Averaged
6	2-Bromonaphthalene	5987	6431	0.010	7.41856	25.00000	Averaged
11	O-Terphenyl	9125	9892	0.010	8.40691	25.00000	Averaged

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fal
Lab ID : WG264246-7
Lab File ID : CMJ2249b.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0708
Analytical Date: 10/22/19 08:10
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	7650	0.010	-1.70504	25.00000	Averaged
30	C19-C36 Aliphatic	7747	7766	0.010	0.25288	25.00000	Averaged
370	C-9	7781	7731	0.010	-0.64196	30.00000	Averaged
380	C-10	7784	7830	0.010	0.58489	25.00000	Averaged
390	C-12	7884	7683	0.010	-2.55154	25.00000	Averaged
400	C-14	7761	7585	0.010	-2.27184	25.00000	Averaged
410	C-16	7858	7605	0.010	-3.22013	25.00000	Averaged
420	C-18	7625	7465	0.010	-2.10916	25.00000	Averaged
430	C-19	7924	7776	0.010	-1.87736	25.00000	Averaged
440	C-20	7741	7666	0.010	-0.96143	25.00000	Averaged
450	C-22	7784	7721	0.010	-0.81189	25.00000	Averaged
460	C-24	7834	7756	0.010	-0.99872	25.00000	Averaged
470	C-26	7697	7718	0.010	0.26689	25.00000	Averaged
480	C-28	7773	7849	0.010	0.97724	25.00000	Averaged
490	C-30	7816	7771	0.010	-0.58166	25.00000	Averaged
500	C-36	7404	7874	0.010	6.35454	25.00000	Averaged
44	5-alpha androstane	8830	7756	0.010	-12.15937	25.00000	Averaged

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fal
Lab ID : WG264246-8
Lab File ID : CMJ2269.d
Initial Calibration Date(s): 06/13/19 14:19 06/14/19 11:54

SDG: TM0708
Analytical Date: 10/23/19 06:33
Instrument ID: GC12
Column ID: A

	Compound	RRF/Amount	RF50	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
20	C9-C18 Aliphatic	7782	7899	0.010	1.49904	25.00000	Averaged
30	C19-C36 Aliphatic	7747	8107	0.010	4.65887	25.00000	Averaged
370	C-9	7781	7951	0.010	2.18826	30.00000	Averaged
380	C-10	7784	7954	0.010	2.18225	25.00000	Averaged
390	C-12	7884	7955	0.010	0.89574	25.00000	Averaged
400	C-14	7761	7874	0.010	1.45933	25.00000	Averaged
410	C-16	7858	7908	0.010	0.64274	25.00000	Averaged
420	C-18	7625	7751	0.010	1.64983	25.00000	Averaged
430	C-19	7924	8040	0.010	1.46170	25.00000	Averaged
440	C-20	7741	7943	0.010	2.61325	25.00000	Averaged
450	C-22	7784	8050	0.010	3.41669	25.00000	Averaged
460	C-24	7834	8096	0.010	3.34428	25.00000	Averaged
470	C-26	7697	8113	0.010	5.40109	25.00000	Averaged
480	C-28	7773	8201	0.010	5.51118	25.00000	Averaged
490	C-30	7816	8301	0.010	6.20601	25.00000	Averaged
500	C-36	7404	8116	0.010	9.61920	25.00000	Averaged
44	5-alpha androstane	8830	7950	0.010	-9.96393	25.00000	Averaged

*** = Compound out of QC criteria**

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FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.14 S2 : 10.52

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	S2 RT #
01		WG255596-5	06/13/19	1419	9.19	10.57
02		WG255596-4	06/13/19	1504	9.16	10.54
03		WG255596-3	06/13/19	1549	9.15	10.53
04		WG255596-2	06/14/19	1108	9.17	10.55
05		WG255596-1	06/14/19	1154	9.14	10.52
06		WG255596-6	06/14/19	1328		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 2

FORM VIII DRO

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SDGA02536

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.45

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG255596-5	06/13/19	1419	15.51	
02		WG255596-4	06/13/19	1504	15.47	
03		WG255596-3	06/13/19	1549	15.46	
04		WG255596-2	06/14/19	1108	15.49	
05		WG255596-1	06/14/19	1154	15.45	
06		WG255596-6	06/14/19	1328		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: TM0708

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 9.09 S2 : 10.47

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01		WG264246-1	10/15/19	1653	9.09		10.47	
02	WG263992-BLA	WG263992-1	10/15/19	1821	9.08		10.46	
03	LFM-99-05A_F	TM0708-1	10/16/19	0546	9.05		10.43	
04	LFM-DUP01_FA	TM0708-2	10/16/19	0632	9.05		10.42	
05	LFM-99-06ARP	TM0708-3	10/16/19	0718	9.04		10.41	
06		WG264246-2	10/16/19	1337	9.15		10.53	
07		WG264246-5	10/22/19	0810	9.11		10.49	
08	WG263992-LCS	WG263992-2RA	10/22/19	2015	9.04		10.42	
09	WG263992-LCS	WG263992-3RA	10/22/19	2101	9.05		10.43	
10		WG264246-6	10/23/19	0633	9.12		10.50	
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

QC LIMITS

S1 = 2-Fluorobiphenyl (+/- 0.15 MINUTES)
S2 = 2-Bromonaphthalene (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Katahdin Analytical Services A000024

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: TM0708

GC Column: RTX-5 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 15.40

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S3 RT #	RT #
01		WG264246-1	10/15/19	1653	15.40	
02	WG263992-BLA	WG263992-1	10/15/19	1821	15.39	
03	LFM-99-05A_F	TM0708-1	10/16/19	0546	15.36	
04	LFM-DUP01_FA	TM0708-2	10/16/19	0632	15.34	
05	LFM-99-06ARP	TM0708-3	10/16/19	0718	15.34	
06		WG264246-2	10/16/19	1337	15.45	
07		WG264246-5	10/22/19	0810	15.42	
08	WG263992-LCS	WG263992-2RA	10/22/19	2015	15.35	
09	WG263992-LCS	WG263992-3RA	10/22/19	2101	15.35	
10		WG264246-6	10/23/19	0633	15.42	
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S3 = O-Terphenyl (+/- 0.15 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

Katahdin Analytical Services A000025

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: SDGA02536

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 17.02

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG255596-11	06/13/19	1419	17.05	
02		WG255596-10	06/13/19	1504	17.03	
03		WG255596-9	06/13/19	1549	17.03	
04		WG255596-8	06/14/19	1108	17.04	
05		WG255596-7	06/14/19	1154	17.02	
06		WG255596-12	06/14/19	1328		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII DRO

Katahdin Analytical Services A000026

FORM 8
DRO ANALYTICAL SEQUENCE

Lab Name: KATAHDIN ANALYTICAL SERVICES Lab Code: KAS

Project: TASAV-DEVENS SDG No.: TM0708

GC Column: RTX-1 ID: 0.53 (mm)Init. Calib. Date(s): 06/13/19 06/14/19

Instrument ID: GC12

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.82

	CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01		WG264246-3	10/15/19	1653	16.82	
02	LFM-99-05A_F	TM0708-1	10/16/19	0546	16.78	
03	LFM-DUP01_FA	TM0708-2	10/16/19	0632	16.78	
04	LFM-99-06ARP	TM0708-3	10/16/19	0718	16.78	
05		WG264246-4	10/16/19	1337	16.83	
06		WG264246-7	10/22/19	0810	16.80	
07	WG263992-BLA	WG263992-1RA	10/22/19	1929	16.77	
08	WG263992-LCS	WG263992-2RA	10/22/19	2015	16.77	
09	WG263992-LCS	WG263992-3RA	10/22/19	2101	16.77	
10		WG264246-8	10/23/19	0633	16.80	
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

QC LIMITS
S1 = 5-alpha androstane (+/- 0.34 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII DRO

Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0708-1
Client ID: LFM-99-05A_FAL19
Project: Long Term Monitoring, DCL Fall 2019
SDG: TM0708
Lab File ID: 2MJ10113.D

Sample Date: 08-OCT-19
Received Date: 11-OCT-19
Extract Date: 16-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149

Analysis Date: 16-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 06-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		74.2	%					
2,5-Dibromotoluene (PID)		86.9	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0708-2
Client ID: LFM-DUP01_FAL19
Project: Long Term Monitoring, DCL Fall 2019
SDG: TM0708
Lab File ID: 2MJ10114.D

Sample Date: 08-OCT-19
Received Date: 11-OCT-19
Extract Date: 16-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149

Analysis Date: 16-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 06-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		86.7	%					
2,5-Dibromotoluene (PID)		104.	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0708-3
Client ID: LFM-99-06ARP_FAL19
Project: Long Term Monitoring, DCL Fall 2019
SDG: TM0708
Lab File ID: 2MJ10115.D

Sample Date: 08-OCT-19
Received Date: 11-OCT-19
Extract Date: 16-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149

Analysis Date: 16-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 06-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	U	5.0	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		85.3	%					
2,5-Dibromotoluene (PID)		101.	%					

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Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM0708-4
Client ID: TRIPBLANK2_100819
Project: Long Term Monitoring, DCL Fall 2019
SDG: TM0708
Lab File ID: 2MJ10103.D

Sample Date: 08-OCT-19
Received Date: 11-OCT-19
Extract Date: 15-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149

Analysis Date: 15-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 06-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	J	1.3	ug/L	1	5	5.0	0.31	3.8
Naphthalene	J	1.8	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		92.7	%					
2,5-Dibromotoluene (PID)		107.	%					

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Katahdin
ANALYTICAL SERVICES

Report of Analytical Results

Client:
Lab ID: WG264149-1
Client ID: Method Blank Sample
Project:
SDG: TM0708
Lab File ID: 2MJ10100.D

Sample Date:
Received Date:
Extract Date: 15-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149

Analysis Date: 15-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA
Report Date: 06-NOV-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
C5-C8 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C12 Aliphatics	U	100	ug/L	1	100	100	50.	75.
C9-C10 Aromatics	U	100	ug/L	1	100	100	50.	75.
Benzene	U	3.0	ug/L	1	3	3.0	0.31	2.0
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.42	3.8
Methyl tert-butylether	U	5.0	ug/L	1	5	5.0	0.31	3.8
Naphthalene	J	1.7	ug/L	1	5	5.0	1.6	3.8
Toluene	U	5.0	ug/L	1	5	5.0	0.34	3.8
m+p-Xylenes	U	10	ug/L	1	10	10.	0.92	7.5
o-Xylene	U	5.0	ug/L	1	5	5.0	0.47	3.8
2,5-Dibromotoluene (FID)		83.7	%					
2,5-Dibromotoluene (PID)		98.4	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Long Term Monitoring, DCL Fall 2019 **Matrix:** AQ
Lab Code: KAS **SDG:** TM0708

Client Sample ID	Lab Sample ID	Col. ID	DBT-FID	#	DBT-PID	#
LFM-99-05A_FAL19	TM0708-1	B	74.2		86.9	
LFM-DUP01_FAL19	TM0708-2	B	86.7		104.	
LFM-99-06ARP_FAL19	TM0708-3	B	85.3		101.	
TRIPBLANK2_100819	TM0708-4	B	92.7		107.	
Method Blank Sample	WG264149-1	B	83.7		98.4	
Laboratory Control S	WG264149-2	B	91.3		108.	
Laboratory Control S	WG264149-3	B	77.8		92.1	

		QC Limits
DBT-FID	2,5-DIBROMOTOLUENE (FID)	70-130
DBT-PID	2,5-DIBROMOTOLUENE (PID)	70-130

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG264149-2
LCSD ID: WG264149-3
Project:
SDG: TM0708
Report Date: 06-NOV-19
LCS File ID: 2MJ10101.D

Received Date:
Extract Date: 15-OCT-19
Extracted By: JHR
Extraction Method: MA-VPH
Lab Prep Batch: WG264149
LCSD File ID: 2MJ10102.D

Analysis Date: 15-OCT-19
Analyst: JHR
Analysis Method: MA DEP VPH 04-1.1
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
C5-C8 Aliphatics	300.	303.	101.	302.	101.	ug/L	0	25	70-130
C9-C12 Aliphatics	200.	225.	112.	220.	110.	ug/L	2	25	70-130
C9-C10 Aromatics	100.	111.	111.	108.	108.	ug/L	3	25	70-130
Benzene	100.	103.	103.	101.	101.	ug/L	2	25	70-130
Ethylbenzene	100.	109.	109.	106.	106.	ug/L	3	25	70-130
Methyl tert-butylether	100.	96.8	96.8	94.7	94.7	ug/L	2	25	70-130
Naphthalene	100.	99.1	99.1	95.8	95.8	ug/L	3	25	70-130
Toluene	100.	104.	104.	102.	102.	ug/L	2	25	70-130
m+p-Xylenes	200.	200.	100.	197.	98.5	ug/L	2	25	70-130
o-Xylene	100.	105.	105.	102.	102.	ug/L	3	25	70-130
2,5-Dibromotoluene (FID)			91.3		77.8				70-130
2,5-Dibromotoluene (PID)			108.		92.1				70-130

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Form 4
Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fall 2019
Lab File ID : 2MJ10100.D
Instrument ID : GC02

SDG : TM0708
Lab Sample ID : WG264149-1
Date Analyzed : 15-OCT-19
Time Analyzed : 13:33
Date Extracted : 15-OCT-19

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG264149-2	2MJ10101..	10/15/19	14:14
Laboratory Control S	WG264149-3	2MJ10102..	10/15/19	14:56
TRIPBLANK2_100819	TM0708-4	2MJ10103..	10/15/19	20:13
LFM-99-05A_FAL19	TM0708-1	2MJ10113..	10/16/19	03:22
LFM-DUP01_FAL19	TM0708-2	2MJ10114..	10/16/19	04:05
LFM-99-06ARP_FAL19	TM0708-3	2MJ10115..	10/16/19	04:48

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0708
Project : Long Term Monitoring, DCL Fall 2019 **Instrument ID:** GC02
Lab File IDs : 2MJ10063.D 2MJ10064.D 2MJ10065.D **Calibration Date(s):** 11-OCT-19 16:53
2MJ10062.D 2MJ10066.D 2MJ10067.D 11-OCT-19 20:26

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C5-C8 Aliphatic	5077	5269	5414	5221	5031	5175	AVG		5198		2.65631	25.00000	M (
C9-C12 Aliphatic	5787	4675	4727	4766	5207	5998	AVG		5193		11.1221(	25.00000	M (
n-Pentane	4746	4710	5109	4591	4417	4628	AVG		4700		4.91166	25.00000	O
2-Methylpentane	5241	5337	5288	5265	5070	5174	AVG		5229		1.81279	25.00000	O
Methyl tert-butylether	4332	4733	4377	4243	4265	3990	AVG		4323		5.58226	25.00000	O
2,2,4-Trimethylpentane	5245	5762	5845	5806	5605	5725	AVG		5664		3.90770	25.00000	O
Benzene	7362	7283	7260	7497	7532	7222	AVG		7359		1.75767	25.00000	O
Toluene	7024	7140	7217	7483	7530	7207	AVG		7267		2.73353	25.00000	O
n-Nonane	5496	4636	4837	4954	5020	5802	AVG		5124		8.54471	25.00000	O
n-Decane	5798	3849	3957	4393	5235	6041	AVG		4879		19.3769(	25.00000	O
Ethylbenzene	6297	6416	6763	7199	7274	7025	AVG		6829		5.97331	25.00000	O
m+p-Xylene	6720	6872	7209	7420	7442	7139	AVG		7134		4.07696	25.00000	O
o-Xylene	6572	6991	7296	7500	7534	7172	AVG		7177		5.00884	25.00000	O
1,2,4-trimethylbenzene	6208	6403	6617	7224	7361	7095	AVG		6818		6.94757	25.00000	O
n-Butylcyclohexane	5775	5501	5497	5138	5180	5954	AVG		5508		5.82780	25.00000	O
Naphthalene	2347	14959	37476	241667	511551	1543539	LNR	1.60411	5171		0.99988	0.99000	O
2,5-Dibromotoluene (FID)	+++++	2672	6616	72797	167070	559910	LNR	8.16972	1907		0.99902	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM0708
Project : Long Term Monitoring, DCL Fall 2019 **Instrument ID:** GC02
Lab File IDs : 2MJ10063.D 2MJ10064.D 2MJ10065.D 2MJ10062.D 2MJ10066.D 2MJ10067.D **Calibration Date(s):** 11-OCT-19 16:53 11-OCT-19 20:26

	1.0000 Level 1	5.0000 Level 2	10.0000 Level 3	50.0000 Level 4	100.0000 Level 5	300.0000 Level 6	New Crv	b	m1	m2	%RSD	Max %RSD	
C9-C10 Aromatic	5061	5308	5557	6266	6050	4706	AVG		5491		10.7798(	25.00000	M (
Methyl tert-butylether	3520	3367	3337	3496	3502	3198	AVG		3403		3.71088	25.00000	O
Benzene	6829	6814	6870	7370	7197	6169	AVG		6875		6.00394	25.00000	O
Toluene	5817	6185	6324	6817	6610	5351	AVG		6184		8.65391	25.00000	O
Ethylbenzene	4894	5083	5333	5919	5762	4635	AVG		5271		9.47534	25.00000	O
m+p-Xylene	6125	6373	6555	6946	6213	4486	AVG		6116		13.89838	25.00000	O
o-Xylene	5082	5437	5607	6039	5758	4686	AVG		5435		8.95291	25.00000	O
1,2,4-trimethylbenzene	5061	5308	5557	6266	6050	4706	AVG		5491		10.7798(	25.00000	O
Naphthalene	2647	16363	40911	287664	579639	+++++	LNR	1.37792	5878		0.99923	0.99000	O
2,5-Dibromotoluene (PID)	+++++	5682	15031	186074	385357	980863	LNR	-1.77028	3320		0.99426	0.99000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

600 Technology Way
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Tel:(207) 874-2400 Fax:(207) 775-4029

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fall 2019 **SDG:** TM0708
Lab ID : WG264149-6 **Analytical Date:** 10/15/19 12:11
Lab File ID : 2MJ10099.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26 **Column ID:** A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type	
2	Methyl tert-butylether	3403	3456	3456	0.100	1.54145	25.00000	Averaged	
3	Benzene	6875	7519	7519	0.100	9.36690	25.00000	Averaged	
4	Toluene	6184	6945	6945	0.100	12.30263	25.00000	Averaged	
5	Ethylbenzene	5271	6095	6095	0.100	15.63852	25.00000	Averaged	
6	m+p-Xylene	6116	7177	7177	0.100	17.34425	25.00000	Averaged	
7	o-Xylene	5435	6228	6228	0.100	14.59352	25.00000	Averaged	
8	1,2,4-trimethylbenzene	5491	6549	6549	0.100	19.25540	25.00000	Averaged	
10	Naphthalene	50.00000	56.21643	6447	0.100	12.43287	25.00000	Linear	
11	2,5-Dibromotoluene (PID)	50.00000	72.32222	4919	0.100	44.64444	25.00000	Linear	*

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fall 2019 **SDG:** TM0708
Lab ID : WG264149-6 **Analytical Date:** 10/15/19 12:11
Lab File ID : 2MJ10099.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26 **Column ID:** B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4700	4791	4791	0.100	1.94291	25.00000	Averaged
6	2-Methylpentane	5229	5683	5683	0.100	8.68741	25.00000	Averaged
7	Methyl tert-butylether	4323	4454	4454	0.100	3.01656	25.00000	Averaged
8	2,2,4-Trimethylpentane	5664	6418	6418	0.100	13.29724	25.00000	Averaged
9	Benzene	7359	7828	7828	0.100	6.37312	25.00000	Averaged
11	Toluene	7267	7797	7797	0.100	7.29938	25.00000	Averaged
12	n-Nonane	5124	5545	5545	0.100	8.21477	30.00000	Averaged
13	n-Decane	4879	4933	4933	0.100	1.10337	25.00000	Averaged
14	Ethylbenzene	6829	7526	7526	0.100	10.20424	25.00000	Averaged
15	m+p-Xylene	7134	7789	7789	0.100	9.18294	25.00000	Averaged
16	o-Xylene	7177	7865	7865	0.100	9.57817	25.00000	Averaged
18	1,2,4-trimethylbenzene	6818	7707	7707	0.100	13.04060	25.00000	Averaged
19	n-Butylcyclohexane	5508	5903	5903	0.100	7.18542	25.00000	Averaged
20	Naphthalene	50.00000	55.00031	5522	0.100	10.00062	25.00000	Linear
21	2,5-Dibromotoluene (FID)	50.00000	60.80850	2008	0.100	21.61700	25.00000	Linear

*** = Compound out of QC criteria**

Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fall 2019 **SDG:** TM0708
Lab ID : WG264149-7 **Analytical Date:** 10/16/19 08:59
Lab File ID : 2MJ10121.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26 **Column ID:** A

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
2	Methyl tert-butylether	3403	3679	3679	0.100	8.10370	25.00000	Averaged
3	Benzene	6875	7637	7637	0.100	11.08566	25.00000	Averaged
4	Toluene	6184	7036	7036	0.100	13.78093	25.00000	Averaged
5	Ethylbenzene	5271	6087	6087	0.100	15.47422	25.00000	Averaged
6	m+p-Xylene	6116	7123	7123	0.100	16.45337	25.00000	Averaged
7	o-Xylene	5435	6191	6191	0.100	13.91310	25.00000	Averaged
8	1,2,4-trimethylbenzene	5491	6361	6361	0.100	15.83845	25.00000	Averaged
10	Naphthalene	50.00000	51.88758	5938	0.100	3.77516	25.00000	Linear
11	2,5-Dibromotoluene (PID)	50.00000	45.22846	3120	0.100	-9.54308	25.00000	Linear

*** = Compound out of QC criteria**

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Long Term Monitoring, DCL Fall 2019 **SDG:** TM0708
Lab ID : WG264149-7 **Analytical Date:** 10/16/19 08:59
Lab File ID : 2MJ10121.D **Instrument ID:** GC02
Initial Calibration Date(s): 10/11/19 16:53 10/11/19 20:26 **Column ID:** B

	Compound	RRF/Amount	RF50	CCAL RRF50	Min	%D/ %Drift	Max %D/ %Drift	Curve Type
5	n-Pentane	4700	4281	4281	0.100	-8.92660	25.00000	Averaged
6	2-Methylpentane	5229	5053	5053	0.100	-3.36594	25.00000	Averaged
7	Methyl tert-butylether	4323	4622	4622	0.100	6.91913	25.00000	Averaged
8	2,2,4-Trimethylpentane	5664	5647	5647	0.100	-0.31429	25.00000	Averaged
9	Benzene	7359	7927	7927	0.100	7.71811	25.00000	Averaged
11	Toluene	7267	7935	7935	0.100	9.19645	25.00000	Averaged
12	n-Nonane	5124	4540	4540	0.100	-11.40164	30.00000	Averaged
13	n-Decane	4879	3962	3962	0.100	-18.78804	25.00000	Averaged
14	Ethylbenzene	6829	7584	7584	0.100	11.05943	25.00000	Averaged
15	m+p-Xylene	7134	7866	7866	0.100	10.26206	25.00000	Averaged
16	o-Xylene	7177	7957	7957	0.100	10.85438	25.00000	Averaged
18	1,2,4-trimethylbenzene	6818	7613	7613	0.100	11.66395	25.00000	Averaged
19	n-Butylcyclohexane	5508	4940	4940	0.100	-10.31272	25.00000	Averaged
20	Naphthalene	50.00000	52.09516	5222	0.100	4.19032	25.00000	Linear
21	2,5-Dibromotoluene (FID)	50.00000	42.08600	1294	0.100	-15.82800	25.00000	Linear

*** = Compound out of QC criteria**

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Form 8
GC Analytical Sequence

Lab Name : Katahdin Analytical Services
SDG : TM0708
Project : Long Term Monitoring, DCL Fall 2019
Instrument ID : GC02

Client Sample ID	Lab Sample ID	Date Analyzed	Time Analyzed	DBT (FID)	DBT (PID)
Initial Calibration	WG264520-4	10/11/19	16:53		31.284
Initial Calibration	WG264520-4	10/11/19	16:53	31.274	
Initial Calibration	WG264520-1	10/11/19	17:34		31.287
Initial Calibration	WG264520-1	10/11/19	17:34	31.271	
Initial Calibration	WG264520-2	10/11/19	18:17		31.299
Initial Calibration	WG264520-2	10/11/19	18:17	31.289	
Initial Calibration	WG264520-3	10/11/19	19:00		31.295
Initial Calibration	WG264520-3	10/11/19	19:00	31.285	
Initial Calibration	WG264520-5	10/11/19	19:43		31.296
Initial Calibration	WG264520-5	10/11/19	19:43	31.287	
Initial Calibration	WG264520-6	10/11/19	20:26		31.303
Initial Calibration	WG264520-6	10/11/19	20:26	31.293	
Independent Source	WG264520-7	10/11/19	21:10	31.29	31.299
Continuing Calibrati	WG264149-6	10/15/19	12:11	31.278	31.288
Method Blank Sample	WG264149-1	10/15/19	13:33	31.285	31.296
Laboratory Control S	WG264149-2	10/15/19	14:14	31.288	31.297
Laboratory Control S	WG264149-3	10/15/19	14:56	31.281	31.291
TRIPBLANK2_100819	TM0708-4	10/15/19	20:13	31.301	31.311
LFM-99-05A_FAL19	TM0708-1	10/16/19	03:22	31.299	31.31
LFM-DUP01_FAL19	TM0708-2	10/16/19	04:05	31.297	31.308
LFM-99-06ARP_FAL19	TM0708-3	10/16/19	04:48	31.297	31.308
Continuing Calibrati	WG264149-7	10/16/19	08:59	31.286	31.297

TM0708

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # DCL_FAL19

Project Name: Long Term Monitoring	Laboratory: Katahdin Analytical Services, Westbrook, ME	Event: KOMAN, Long Term Monitoring, DCL Fall 2019
Project Number: DEVNS-LTM	POC: Please insert point of contact, insert laboratory phone number, insert	
WBS Code: Purchase Order 19-804	Ship to: Please add laboratory address	

Comments:

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
2	2 x 1 Liter, amber, glass, 1:1 HCl to pH =2; Cool < 6°C
4	2 x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6°C

						Analytical Test Method					
	Event: KOMAN, Long Term Monitoring, DCL Fall 2019					MADEPEP - EPH with PAHs	MADEPVP - VPH with targets				
						2	4				
	Sample ID	Matrix	Date	Time	Samp Init.			Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
1	~~LFM-03-07_FAL19~~	~~WG~~				X	X	~~LFM-03-07~~	~~N1~~	~~10.90~~	~~20.90~~		1
2	~~LFM-99-02B_FAL19~~	~~WG~~				~~X~~	~~X~~	~~LFM-99-02B~~	~~N1~~	~~14.50~~	~~25.83~~		1
3	LFM-99-05A_FAL19	WG	10/8/19	0945	B/A	X	X	LFM-99-05A	N1	19.00	29.98		1
4	LFM-DUP01_FAL19	WG	10/8/19	0950	B/A	X	X	LFM-99-05A	FD1	19.00	29.98		1
5	LFM-99-06ARP_FAL19	WG	10/8/19	1200	B/A	X	X	LFM-99-06ARP	N1	10.09	19.39		1
6	~~LFM~~												
7	TripBlank2_100819	WQ	10/8/19		B/A		X	Trip Blank	TB				
8													
9													
10													
		Turnaround Time: 21 Days											

Relinquished by: *(Signature)*	Date	Time
	10/9/19	1450
	10/10/19	1707

Received by: *(Signature)*	Date	Time
	10/9/19	1450

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

10.1.19 0945 0.8°C

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 508.366.7442, lekes@komangs.com

COC # DCL_FAL19

KGS

Project Name: Long Term Monitoring	Laboratory: TestAmerica Laboratories, Inc., Savannah, GA
Project Number: DEVNS-LTM	POC: Jerry Lanier 912.354.7858 jerry.lanier@testamericainc.com
WBS Code: Purchase Order 19-804	Ship to: 5102 LaRoche Avenue, Savannah, GA 31404

Comments:

NOTE; Pesticides/PCBs are combined (2-1L amber glass)
Metals are TOTAL metals include: Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, and Ag by 6010 and can be combined with Hg and As into 1-250 ml HNO3 preserved bottles/

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
1	2 x 1L amber glass bottles, Cool to <6°C
5	1 x 125mL plastic, Cool < 6°C
6	1 x 125mL, plastic, Cool < 6°C
9	1 x 250mL, plastic, HNO3, pH < 2, Cool < 6°C
21	1 x 2-1 Liter, amber, glass, Cool < 6°C
46	1 x 250mL, plastic, Cool < 6°C
47	1 x 500mL, amber glass, H2SO4, Cool < 6°C
48	1 x 250mL plastic, NaOH to pH >12, Cool < 6°C
49	1 x 500mL plastic, Cool < 6°C

Event: KOMAN, Long Term Monitoring, DCL Fall 2019

	Sample ID	Matrix	Date	Time	Samp Init.	SW8082A - PCB (1)	SW9056A - Cl SO4 (5)	E410.4 - COD (6)	SW6010C - Ba Cd Cr Cu Fe Pb Mn Se Ag (9)	SW6020A - As (9)	SW7470A - Mercury (9)	SW8081B - Pesticides (21)	A2320B - Alkalinity (46)	E353.2 - Nitrite Nitrate as N (47)	SW9012B - Cyanide (48)	A2540C - TDS (49)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
1	~~LFM-03-07_FAL19~~	WG				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~LFM-03-07~~	~~N1~~	~~10.90~~	~~20.90~~
2	~~LFM-99-02B_FAL19~~	WG				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~LFM-99-02B~~	~~N1~~	~~14.50~~	~~25.83~~
3	LFM-99-05A_FAL19	WG	10/8/15	0945	B/A	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	N1	19.00	29.98
4	LFM-DUP01_FAL19	WG	10/8/15	0950	B/A	X	X	X	X	X	X	X	X	X	X	X	LFM-99-05A	FD1	19.00	29.98
5	LFM-99-06ARP_FAL19	WG	10/8/15	1250	B/A	X	X	X	X	X	X	X	X	X	X	X	LFM-99-06ARP	N1	10.09	19.39
6																				
7																				
8																				
9																				
10																				
		Turnaround Time: 21 Days																		

Relinquished by: *(Signature)*	Date	Time
	10/9/15	1450
	10/10/15	1200

Received by: *(Signature)*	Date	Time
	10/9/15	1450
	10-11-15	0910
29/1.1/0.3(cf)3.1/13/0.5°c		

Shipping Date / Carrier / Airbill Number

Receive

680-175305-01 Chain of Custody

Katahdin
ANALYTICAL SERVICES

INVOICE

Cert No E87604

Page 1 of 1

Invoice Number	Invoice Date
121862	12-NOV-19

BILL TO:

Accounts Payable
Test America Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Acctnum: TASAV001
Project: Long Term Monitoring, DCL Fall 2019
Report To: Jerry Lanier
Test America Savannah
Terms: Net 30 days
PO#: 3056544
Contract:
Client PM:

Katahdin Project Manager: HHM
SDG:
Comments:

Sample ID (Client ID):

TM0708-2(LFM-DUP01_FAL19), TM0708-1(LFM-99-05A_FAL19), TM0708-3(LFM-99-06ARP_FAL19), TM0708-4(TRIPBLANK2_100819),

Qty	Matrix	Analysis	Description	Unit Price	Total Price
3	Aqueous	MA-EPH	EPH by MA DEP 04-1.1	$130.00	$390.00
4	Aqueous	MA-VPH	VPH by MA-DEP 04-1.1	$65.00	$260.00

Samples: 4 Analyses: 7

Total Amount Due: ***$650.00***

Remit to:

Katahdin Analytical Services, LLC
PO Box 540
Scarborough, ME 04070

****For proper credit please show the INVOICE NUMBER on your remittance***

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sales@katahdinlab.com

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Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 680-584560.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jerry.lanier@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 680-175305-1
Address: 4955 Yarrow Street,	Due Date Requested: 10/23/2019			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Fort Devens Army Installation	Project #: 68016363			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	410.4/ COD	2540C_Calcd/ TDS	2320B/ Alkalinity	353.2_Pres	9060A/ (MOD) Waters - TOC Duplicates	Total Number of containers	Special Instructions/Note:
			Preservation Code:										
LFM-99-05A_FAL19 (680-175305-1)	10/8/19	09:45 Eastern		Water			X	X	X	X		3	
LFM-DUP01_FAL19 (680-175305-2)	10/8/19	09:50 Eastern		Water			X	X	X	X		3	
LFM-99-06ARP_FAL19 (680-175305-3)	10/8/19	12:00 Eastern		Water			X	X	X	X		3	
XGM-93-02X_FAL19 (680-175305-4)	10/9/19	09:55 Eastern		Water					X			1	
XGM-97-12X_FAL19 (680-175305-5)	10/9/19	11:20 Eastern		Water					X			1	
XGM-DUP1_FAL19 (680-175305-6)	10/9/19	11:25 Eastern		Water					X			1	
43G-EB-100919 (680-175305-7)	10/9/19	12:15 Eastern		Water					X			1	
G6M-04-10X-FAL19 (680-175305-13)	10/9/19	09:40 Eastern		Water							X	1	
G6M-07-02X_FAL19 (680-175305-14)	10/9/19	10:45 Eastern		Water					X	X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 10.11.19 1722	Company:	Received by: [signature]	Date/Time: 10/12/19 0900	Company: EAPEN
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 1.4, TR8, CFO, DVP, 10/12/19		

Ver: 01/16/2019

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 680-584560.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: jerry.lanier@testamericainc.com	State of Origin: Massachusetts	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 680-175305-1
Address: 4955 Yarrow Street,	Due Date Requested: 10/23/2019			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Fort Devens Army Installation	Project #: 68016363			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	410.4/ COD	2540C_Calcd/ TDS	2320B/ Alkalinity	353.2_Pres	9060A/ (MOD) Waters - TOC Duplicates	Total Number of containers	Special Instructions/Note:
			Preservation Code:										
AOC50_DUP1_FAL19 (680-175305-15)	10/9/19	10:50 Eastern		Water					X	X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	10.11.19 1722		[signature]	10/12/19 0900	EAVA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.9, IR6, CF0, PVR, 10/12/19

Ver: 01/16/2019

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 680-584561.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jerry.lanier@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 680-175305-1
Address: 4955 Yarrow Street,	Due Date Requested: 10/23/2019			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Fort Devens Army Installation	Project #: 68016363			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	410.4/ COD	2540C_Calcd/ TDS	2320B/ Alkalinity	353.2_Pres	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
LFM-99-06ARP_FAL19 (680-175305-3)	10/8/19	12:00 Eastern		Water			X	X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		10.11.19 1728			10/12/19 0900	ETADV
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.9, 1.8, 0.0, PVP, 10/11/19

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175305-1

Login Number: 175305
List Number: 1
Creator: Banda, Christy S

List Source: Eurofins TestAmerica, Savannah

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

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175305-1

Login Number: 175305
List Number: 2
Creator: Petunin, Peter

List Source: Eurofins TestAmerica, Denver
List Creation: 10/12/19 03:22 PM

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175305-1
Project/Site: LTM/DCL Fall 2019

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	SAVLAB	
Alabama	State	41450	06-30-20
Alaska	State	GA00006	06-30-20
Alaska (UST)	State	17-016	09-30-20
ANAB	Dept. of Defense ELAP	L2463	09-22-22
ANAB	ISO/IEC 17025	L2463.01	09-22-22
Arkansas DEQ	State	19-015-0	02-01-20
California	State	2939	06-30-20
Colorado	State	GA00006	12-31-19
Connecticut	State	PH-0161	03-31-21
Florida	NELAP	E87052	06-30-20
GA Dept. of Agriculture	State Program	N/A	06-12-20
Georgia	State	E87052	06-30-20
Georgia (DW)	State	803	06-30-20
Guam	State	19-007R	04-17-20
Hawaii	State	<cert No.>	06-30-20
Indiana	State	C-GA-02	06-30-20
Iowa	State	353	09-22-20
Kansas	NELAP	E-10322	10-15-20
Kentucky (DW)	State	KY90084	12-31-19
Kentucky (UST)	State	<cert No.>	06-30-20
Kentucky (WW)	State	KY90084	12-31-19
Louisiana	NELAP	02011	06-30-20
Louisiana (DW)	State	LA009	12-31-19
Maine	State	GA00006	09-26-20
Maryland	State	250	12-31-19
Massachusetts	State	M-GA006	06-30-20
Michigan	State	9925	06-30-20
Mississippi	State	<cert No.>	06-30-20
Nebraska	State	NE-OS-7-04	06-30-20
New Hampshire	NELAP	2096	05-29-20
New Jersey	NELAP	GA769	06-30-20
New Mexico	State	GA00006	06-30-20
New York	NELAP	10842	04-01-20
North Carolina (DW)	State	13701	07-31-20
North Carolina (WW/SW)	State	269	12-31-19
Oklahoma	State	9984	08-31-20
Pennsylvania	NELAP	68-00474	06-30-20
Puerto Rico	State	GA00006	01-01-20
South Carolina	State	98001	06-30-20
Tennessee	State	02961	06-30-20
Texas	NELAP	T1047004185-19-14	11-30-19
Texas	TCEQ Water Supply	T104704185	09-23-20
US Fish & Wildlife	US Federal Programs	LE058448-0	07-31-20
Virginia	NELAP	10509	06-14-20
Washington	State	C805	06-10-20
West Virginia (DW)	State	9950C	12-31-19
West Virginia DEP	State	094	11-30-19
Wisconsin	State	999819810	08-31-20
Wyoming	State	8TMS-L	06-30-20 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175305-1
Project/Site: LTM/DCL Fall 2019

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-21

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-175952-1
Client Project/Site: LTM / DCL Leach 2019

For:
KOMAN Government Solutions, LLC
293 Boston Post Road West
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Jerry Lanier

Authorized for release by:
11/8/2019 6:35:09 PM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

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

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

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

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Job ID: 680-175952-1

Laboratory: Eurofins TestAmerica, Savannah

Narrative

CASE NARRATIVE

Client: KOMAN Government Solutions, LLC

Project: LTM / DCL Leach 2019

Report Number: 680-175952-1

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 the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 10/25/2019; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 4.0 C.

DIESEL RANGE ORGANICS (DRO)
Sample DCL LEACHATE_FAL19 (680-175952-1) was analyzed for Diesel Range Organics (DRO) in accordance with EPA SW-846 8015C. The samples were prepared on 10/30/2019 and analyzed on 11/02/2019.

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

PESTICIDES AND PCBS
Sample DCL LEACHATE_FAL19 (680-175952-1) was analyzed for Pesticides and PCBs in accordance with EPA SW-846 Method 8081B_8082A. The samples were prepared on 10/28/2019 and analyzed on 10/29/2019.

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

METALS
Sample DCL LEACHATE_FAL19 (680-175952-1) was analyzed for Metals in accordance with EPA SW-846 Method 6020. The samples were prepared on 10/27/2019 and analyzed on 10/28/2019.

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

MERCURY
Sample DCL LEACHATE_FAL19 (680-175952-1) was analyzed for mercury in accordance with EPA SW-846 Method 7470A. The samples were prepared on 10/28/2019 and analyzed on 10/29/2019.

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

TOTAL SUSPENDED SOLIDS
Sample DCL LEACHATE_FAL19 (680-175952-1) was analyzed for total suspended solids in accordance with SM 2540D. The samples were analyzed on 10/30/2019.

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

CYANIDE
Sample DCL LEACHATE_FAL19 (680-175952-1) was analyzed for cyanide in accordance with EPA SW-846 Method 9012B. The samples

Job ID: 680-175952-1 (Continued)

Laboratory: Eurofins TestAmerica, Savannah (Continued)

were prepared and analyzed on 10/30/2019.

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

PH

Sample DCL LEACHATE_FAL19 (680-175952-1) was analyzed for pH in accordance with EPA SW-846 Method 9040C. The samples were analyzed on 10/31/2019.

This analysis is considered a field test and is to be performed within 15 minutes of collection. This sample(s) was performed in the laboratory outside the 15 minute timeframe.

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

PHENOLICS, TOTAL RECOVERABLE

Sample DCL LEACHATE_FAL19 (680-175952-1) was analyzed for phenolics, total recoverable in accordance with EPA SW-846 Method 9065. The samples were prepared and analyzed on 10/29/2019.

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

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Leach 2019

Job ID: 680-175952-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-175952-1	DCL LEACHATE_FAL19	Water	10/23/19 10:30	10/25/19 09:25	

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Leach 2019

Job ID: 680-175952-1

Method	Method Description	Protocol	Laboratory
8015C DRO	Diesel Range Organics (DRO) (GC)	SW846	TAL SAV
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
7470A	Mercury (CVAA)	SW846	TAL SAV
9012B	Cyanide, Total and/or Amenable	EPA	TAL SAV
9040C	pH	SW846	TAL SAV
9065	Phenolics, Total Recoverable	SW846	TAL SAV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
3010A	Preparation, Total Metals	SW846	TAL SAV
3520C	Liquid-Liquid Extraction (Continuous)	SW846	TAL SAV
7470A	Preparation, Mercury	SW846	TAL SAV
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	TAL SAV
Distill/Phenol	Distillation, Phenolics	None	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency

None = None

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

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

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Client: KOMAN Government Solutions, LLC
Job ID: 680-175952-1
Project/Site: LTM / DCL Leach 2019

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

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

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Leach 2019

Job ID: 680-175952-1

Client Sample ID: DCL LEACHATE_FAL19

Date Collected: 10/23/19 10:30
Date Received: 10/25/19 09:25

Lab Sample ID: 680-175952-1

Matrix: Water

Method: 8015C DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**2.6**		0.099	0.084	0.049	mg/L		11/02/19 15:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*75*		*56 - 125*	*10/30/19 17:29*	*11/02/19 15:09*	*1*

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0090	U	0.025	0.0090	0.0036	ug/L		10/29/19 17:26	1
alpha-BHC	0.0050	U	0.025	0.0050	0.0017	ug/L		10/29/19 17:26	1
beta-BHC	0.0090	U	0.025	0.0090	0.0046	ug/L		10/29/19 17:26	1
Chlordane (technical)	0.15	U	0.25	0.15	0.048	ug/L		10/29/19 17:26	1
4,4'-DDD	0.0050	U	0.025	0.0050	0.0032	ug/L		10/29/19 17:26	1
4,4'-DDE	**0.0072**	**J**	0.025	0.0050	0.0026	ug/L		10/29/19 17:26	1
4,4'-DDT	0.0090	U	0.025	0.0090	0.0035	ug/L		10/29/19 17:26	1
delta-BHC	0.0090	U	0.025	0.0090	0.0038	ug/L		10/29/19 17:26	1
Dieldrin	0.0050	U M	0.025	0.0050	0.0019	ug/L		10/29/19 17:26	1
Endosulfan I	0.0050	U	0.025	0.0050	0.0018	ug/L		10/29/19 17:26	1
Endosulfan II	0.0050	U	0.025	0.0050	0.0021	ug/L		10/29/19 17:26	1
Endosulfan sulfate	0.0050	U	0.025	0.0050	0.0026	ug/L		10/29/19 17:26	1
Endrin	0.0050	U	0.025	0.0050	0.0027	ug/L		10/29/19 17:26	1
Endrin aldehyde	0.0050	U M	0.025	0.0050	0.0031	ug/L		10/29/19 17:26	1
Endrin ketone	0.0050	U M	0.025	0.0050	0.0023	ug/L		10/29/19 17:26	1
gamma-BHC (Lindane)	0.0050	U M	0.025	0.0050	0.0018	ug/L		10/29/19 17:26	1
Heptachlor	0.0090	U	0.025	0.0090	0.0036	ug/L		10/29/19 17:26	1
Heptachlor epoxide	0.0050	U	0.025	0.0050	0.0019	ug/L		10/29/19 17:26	1
Methoxychlor	0.0090	U M	0.025	0.0090	0.0049	ug/L		10/29/19 17:26	1
PCB-1016	0.18	U M	0.50	0.18	0.090	ug/L		10/29/19 17:26	1
PCB-1221	0.17	U	0.50	0.17	0.095	ug/L		10/29/19 17:26	1
PCB-1232	0.23	U M	0.50	0.23	0.13	ug/L		10/29/19 17:26	1
PCB-1242	0.23	U M	0.50	0.23	0.095	ug/L		10/29/19 17:26	1
PCB-1248	0.23	U M	0.50	0.23	0.11	ug/L		10/29/19 17:26	1
PCB-1254	0.17	U M	0.50	0.17	0.055	ug/L		10/29/19 17:26	1
PCB-1260	0.18	U M	0.50	0.18	0.060	ug/L		10/29/19 17:26	1
Toxaphene	0.40	U M	2.5	0.40	0.20	ug/L		10/29/19 17:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*27*		*14 - 130*	*10/28/19 14:30*	*10/29/19 17:26*	*1*
Tetrachloro-m-xylene	*52*		*44 - 124*	*10/28/19 14:30*	*10/29/19 17:26*	*1*

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	50	U	100	50	18	ug/L		10/28/19 18:55	1
Arsenic	**1.5**	**J**	3.0	3.0	1.5	ug/L		10/28/19 18:55	1
Cadmium	0.40	U Q	0.50	0.40	0.15	ug/L		10/28/19 18:55	1
Chromium	4.0	U	5.0	4.0	1.6	ug/L		10/28/19 18:55	1
Copper	4.0	U Q	5.0	4.0	1.7	ug/L		10/28/19 18:55	1
Lead	2.5	U	2.5	2.5	0.98	ug/L		10/28/19 18:55	1
Nickel	**3.0**	**J**	5.0	5.0	1.9	ug/L		10/28/19 18:55	1
Silver	0.30	U	1.0	0.30	0.10	ug/L		10/28/19 18:55	1
Zinc	20	U	20	20	9.6	ug/L		10/28/19 18:55	1

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Leach 2019

Job ID: 680-175952-1

Client Sample ID: DCL LEACHATE_FAL19
Date Collected: 10/23/19 10:30
Date Received: 10/25/19 09:25

Lab Sample ID: 680-175952-1
Matrix: Water

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/29/19 13:01	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		10/30/19 16:09	1
pH	**7.7**					SU		10/31/19 19:24	1
Phenolics, Total Recoverable	0.050	U	0.050	0.050	0.025	mg/L		10/29/19 12:31	1
Total Suspended Solids	**12**		4.0	2.8	1.1	mg/L		10/30/19 13:28	1

Surrogate Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Leach 2019

Job ID: 680-175952-1

Method: 8015C DRO - Diesel Range Organics (DRO) (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	OTPH1 (56-125)							
680-175952-1	DCL LEACHATE_FAL19	75							
LCS 680-593693/10-A	Lab Control Sample	78							
LCSD 680-593693/11-A	Lab Control Sample Dup	72							
MB 680-593693/9-A	Method Blank	86 M							

Surrogate Legend

OTPH = o-Terphenyl (Surr)

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	DCBP1 (14-130)	TCX1 (44-124)						
680-175952-1	DCL LEACHATE_FAL19	27	52						
LCS 680-593275/16-A	Lab Control Sample	93	76						
LCS 680-593275/18-A	Lab Control Sample	79	73						
LCSD 680-593275/17-A	Lab Control Sample Dup	82	68						
LCSD 680-593275/19-A	Lab Control Sample Dup	75	73						
MB 680-593275/15-A	Method Blank	66	66						

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8015C DRO - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 680-593693/9-A
Matrix: Water
Analysis Batch: 594200

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 593693

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	0.085	U	0.10	0.085	0.050	mg/L		11/02/19 13:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*86*	*M*	*56 - 125*	*10/30/19 17:29*	*11/02/19 13:55*	*1*

Lab Sample ID: LCS 680-593693/10-A
Matrix: Water
Analysis Batch: 594200

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 593693

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Diesel Range Organics [C10-C28]			1.00	0.705		mg/L		71	36 - 132		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl (Surr)	*78*		*56 - 125*

Lab Sample ID: LCSD 680-593693/11-A
Matrix: Water
Analysis Batch: 594200

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 593693

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]			1.00	0.641		mg/L		64	36 - 132	10	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl (Surr)	*72*		*56 - 125*

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-593275/15-A
Matrix: Water
Analysis Batch: 593498

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 593275

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aldrin	0.0090	U	0.025	0.0090	0.0036	ug/L		10/29/19 15:50	1
alpha-BHC	0.0050	U M	0.025	0.0050	0.0017	ug/L		10/29/19 15:50	1
beta-BHC	0.0090	U	0.025	0.0090	0.0046	ug/L		10/29/19 15:50	1
Chlordane (technical)	0.15	U M	0.25	0.15	0.048	ug/L		10/29/19 15:50	1
4,4'-DDD	0.0050	U	0.025	0.0050	0.0032	ug/L		10/29/19 15:50	1
4,4'-DDE	0.0050	U	0.025	0.0050	0.0026	ug/L		10/29/19 15:50	1
4,4'-DDT	0.0090	U	0.025	0.0090	0.0035	ug/L		10/29/19 15:50	1
delta-BHC	0.0090	U M	0.025	0.0090	0.0038	ug/L		10/29/19 15:50	1
Dieldrin	0.0050	U	0.025	0.0050	0.0019	ug/L		10/29/19 15:50	1
Endosulfan I	0.0050	U	0.025	0.0050	0.0018	ug/L		10/29/19 15:50	1
Endosulfan II	0.0050	U	0.025	0.0050	0.0021	ug/L		10/29/19 15:50	1
Endosulfan sulfate	0.0050	U	0.025	0.0050	0.0026	ug/L		10/29/19 15:50	1
Endrin	0.0050	U	0.025	0.0050	0.0027	ug/L		10/29/19 15:50	1
Endrin aldehyde	0.0050	U M	0.025	0.0050	0.0031	ug/L		10/29/19 15:50	1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: MB 680-593275/15-A
Matrix: Water
Analysis Batch: 593498

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 593275

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Endrin ketone	0.0050	U M	0.025	0.0050	0.0023	ug/L		10/29/19 15:50	1
gamma-BHC (Lindane)	0.0050	U	0.025	0.0050	0.0018	ug/L		10/29/19 15:50	1
Heptachlor	0.0090	U	0.025	0.0090	0.0036	ug/L		10/29/19 15:50	1
Heptachlor epoxide	0.0050	U	0.025	0.0050	0.0019	ug/L		10/29/19 15:50	1
Methoxychlor	0.0090	U	0.025	0.0090	0.0049	ug/L		10/29/19 15:50	1
PCB-1016	0.18	U	0.50	0.18	0.090	ug/L		10/29/19 15:50	1
PCB-1221	0.17	U	0.50	0.17	0.095	ug/L		10/29/19 15:50	1
PCB-1232	0.23	U M	0.50	0.23	0.13	ug/L		10/29/19 15:50	1
PCB-1242	0.23	U M	0.50	0.23	0.095	ug/L		10/29/19 15:50	1
PCB-1248	0.23	U M	0.50	0.23	0.11	ug/L		10/29/19 15:50	1
PCB-1254	0.17	U	0.50	0.17	0.055	ug/L		10/29/19 15:50	1
PCB-1260	0.18	U	0.50	0.18	0.060	ug/L		10/29/19 15:50	1
Toxaphene	0.40	U M	2.5	0.40	0.20	ug/L		10/29/19 15:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*66*		*14 - 130*	*10/28/19 14:30*	*10/29/19 15:50*	*1*
Tetrachloro-m-xylene	*66*		*44 - 124*	*10/28/19 14:30*	*10/29/19 15:50*	*1*

Lab Sample ID: LCS 680-593275/16-A
Matrix: Water
Analysis Batch: 593498

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 593275

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.0500	0.0441		ug/L		88	45 - 134
alpha-BHC	0.0500	0.0532		ug/L		106	54 - 138
beta-BHC	0.0500	0.0521		ug/L		104	56 - 136
4,4'-DDD	0.0500	0.0487		ug/L		97	56 - 143
4,4'-DDE	0.0500	0.0498		ug/L		100	57 - 135
4,4'-DDT	0.0500	0.0547		ug/L		109	51 - 143
delta-BHC	0.0500	0.0506		ug/L		101	52 - 142
Dieldrin	0.0500	0.0500		ug/L		100	60 - 136
Endosulfan I	0.0500	0.0400		ug/L		80	62 - 126
Endosulfan II	0.0500	0.0501		ug/L		100	52 - 135
Endosulfan sulfate	0.0500	0.0488		ug/L		98	62 - 133
Endrin	0.0500	0.0555		ug/L		111	60 - 138
Endrin aldehyde	0.0500	0.0577		ug/L		115	51 - 132
Endrin ketone	0.0500	0.0521		ug/L		104	58 - 134
gamma-BHC (Lindane)	0.0500	0.0490		ug/L		98	59 - 134
Heptachlor	0.0500	0.0452		ug/L		90	54 - 130
Heptachlor epoxide	0.0500	0.0489		ug/L		98	61 - 133
Methoxychlor	0.0500	0.0604		ug/L		121	54 - 145

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*93*		*14 - 130*
Tetrachloro-m-xylene	*76*		*44 - 124*

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCS 680-593275/18-A
Matrix: Water
Analysis Batch: 593498

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 593275

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-1016			3.00	2.67		ug/L		89	46 - 129		
PCB-1260			3.00	2.65		ug/L		88	45 - 134		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*79*		*14 - 130*
Tetrachloro-m-xylene	*73*		*44 - 124*

Lab Sample ID: LCSD 680-593275/17-A
Matrix: Water
Analysis Batch: 593498

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 593275

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin			0.0500	0.0421		ug/L		84	45 - 134	5	30
alpha-BHC			0.0500	0.0488		ug/L		98	54 - 138	9	30
beta-BHC			0.0500	0.0484		ug/L		97	56 - 136	7	30
4,4'-DDD			0.0500	0.0464		ug/L		93	56 - 143	5	30
4,4'-DDE			0.0500	0.0472		ug/L		94	57 - 135	5	30
4,4'-DDT			0.0500	0.0526		ug/L		105	51 - 143	4	30
delta-BHC			0.0500	0.0472		ug/L		94	52 - 142	7	30
Dieldrin			0.0500	0.0477		ug/L		95	60 - 136	5	30
Endosulfan I			0.0500	0.0376		ug/L		75	62 - 126	6	30
Endosulfan II			0.0500	0.0459		ug/L		92	52 - 135	9	30
Endosulfan sulfate			0.0500	0.0455		ug/L		91	62 - 133	7	30
Endrin			0.0500	0.0549		ug/L		110	60 - 138	1	30
Endrin aldehyde			0.0500	0.0494		ug/L		99	51 - 132	16	30
Endrin ketone			0.0500	0.0452		ug/L		90	58 - 134	14	30
gamma-BHC (Lindane)			0.0500	0.0452		ug/L		90	59 - 134	8	30
Heptachlor			0.0500	0.0431		ug/L		86	54 - 130	5	30
Heptachlor epoxide			0.0500	0.0471		ug/L		94	61 - 133	4	30
Methoxychlor			0.0500	0.0555		ug/L		111	54 - 145	8	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*82*		*14 - 130*
Tetrachloro-m-xylene	*68*		*44 - 124*

Lab Sample ID: LCSD 680-593275/19-A
Matrix: Water
Analysis Batch: 593498

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 593275

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016			3.00	2.73		ug/L		91	46 - 129	2	30
PCB-1260			3.00	2.71		ug/L		90	45 - 134	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*75*		*14 - 130*
Tetrachloro-m-xylene	*73*		*44 - 124*

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-593154/1-A
Matrix: Water
Analysis Batch: 593442

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 593154

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Aluminum	50	U	100	50	18	ug/L		10/28/19 18:28	1
Arsenic	3.0	U	3.0	3.0	1.5	ug/L		10/28/19 18:28	1
Chromium	4.0	U	5.0	4.0	1.6	ug/L		10/28/19 18:28	1
Lead	2.5	U	2.5	2.5	0.98	ug/L		10/28/19 18:28	1
Nickel	5.0	U	5.0	5.0	1.9	ug/L		10/28/19 18:28	1
Silver	0.30	U	1.0	0.30	0.10	ug/L		10/28/19 18:28	1
Zinc	20	U	20	20	9.6	ug/L		10/28/19 18:28	1

Lab Sample ID: LCS 680-593154/2-A
Matrix: Water
Analysis Batch: 593442

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 593154

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	5000	4860		ug/L		97	84 - 117
Arsenic	100	100		ug/L		100	84 - 116
Chromium	100	99.6		ug/L		100	85 - 116
Lead	505	467		ug/L		92	88 - 115
Nickel	99.5	98.4		ug/L		99	85 - 117
Silver	50.0	49.4		ug/L		99	85 - 116
Zinc	101	99.4		ug/L		99	83 - 119

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 680-593355/13-A
Matrix: Water
Analysis Batch: 593611

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 593355

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.20	0.080	ug/L		10/29/19 12:07	1

Lab Sample ID: LCS 680-593355/14-A
Matrix: Water
Analysis Batch: 593611

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 593355

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.50	2.47		ug/L		99	80 - 124

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-593678/1-A
Matrix: Water
Analysis Batch: 593763

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 593678

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		10/30/19 16:16	1

Method: 9012B - Cyanide, Total and/or Amenable (Continued)

Lab Sample ID: LCS 680-593678/2-A
Matrix: Water
Analysis Batch: 593763

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 593678

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0517		mg/L		103	83 - 116

Method: 9040C - pH

Lab Sample ID: LCS 680-594244/5
Matrix: Water
Analysis Batch: 594244

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.01	7.1		SU		101	63 - 158

Method: 9065 - Phenolics, Total Recoverable

Lab Sample ID: MB 680-593434/1-A
Matrix: Water
Analysis Batch: 593527

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 593434

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Phenolics, Total Recoverable	0.050	U	0.050	0.050	0.025	mg/L		10/29/19 12:31	1

Lab Sample ID: LCS 680-593434/2-A
Matrix: Water
Analysis Batch: 593527

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 593434

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenolics, Total Recoverable	0.100	0.0895		mg/L		90	75 - 125

Lab Sample ID: 680-175952-1 MS
Matrix: Water
Analysis Batch: 593527

Client Sample ID: DCL LEACHATE_FAL19
Prep Type: Total/NA
Prep Batch: 593434

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenolics, Total Recoverable	0.050	U	0.100	0.113		mg/L		113	75 - 125

Lab Sample ID: 680-175952-1 MSD
Matrix: Water
Analysis Batch: 593527

Client Sample ID: DCL LEACHATE_FAL19
Prep Type: Total/NA
Prep Batch: 593434

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Phenolics, Total Recoverable	0.050	U	0.100	0.107		mg/L		107	75 - 125	5	30

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-475922/1
Matrix: Water
Analysis Batch: 475922

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Total Suspended Solids	2.8	U	4.0	2.8	1.1	mg/L		10/30/19 13:28	1

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: LCS 280-475922/2
Matrix: Water
Analysis Batch: 475922

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	82.0		mg/L		82	79 - 114		

Lab Sample ID: LCSD 280-475922/3
Matrix: Water
Analysis Batch: 475922

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids			100	88.8		mg/L		89	79 - 114	8	20

Lab Sample ID: 680-175952-1 DU
Matrix: Water
Analysis Batch: 475922

Client Sample ID: DCL LEACHATE_FAL19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	12			12.4		mg/L				0	10

GC Semi VOA

Prep Batch: 593275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	3520C	
MB 680-593275/15-A	Method Blank	Total/NA	Water	3520C	
LCS 680-593275/16-A	Lab Control Sample	Total/NA	Water	3520C	
LCS 680-593275/18-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-593275/17-A	Lab Control Sample Dup	Total/NA	Water	3520C	
LCSD 680-593275/19-A	Lab Control Sample Dup	Total/NA	Water	3520C	

Analysis Batch: 593498

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	8081B 8082A	593275
MB 680-593275/15-A	Method Blank	Total/NA	Water	8081B 8082A	593275
LCS 680-593275/16-A	Lab Control Sample	Total/NA	Water	8081B 8082A	593275
LCS 680-593275/18-A	Lab Control Sample	Total/NA	Water	8081B 8082A	593275
LCSD 680-593275/17-A	Lab Control Sample Dup	Total/NA	Water	8081B 8082A	593275
LCSD 680-593275/19-A	Lab Control Sample Dup	Total/NA	Water	8081B 8082A	593275

Prep Batch: 593693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	3520C	
MB 680-593693/9-A	Method Blank	Total/NA	Water	3520C	
LCS 680-593693/10-A	Lab Control Sample	Total/NA	Water	3520C	
LCSD 680-593693/11-A	Lab Control Sample Dup	Total/NA	Water	3520C	

Analysis Batch: 594200

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	8015C DRO	593693
MB 680-593693/9-A	Method Blank	Total/NA	Water	8015C DRO	593693
LCS 680-593693/10-A	Lab Control Sample	Total/NA	Water	8015C DRO	593693
LCSD 680-593693/11-A	Lab Control Sample Dup	Total/NA	Water	8015C DRO	593693

Metals

Prep Batch: 593154

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	3010A	
MB 680-593154/1-A	Method Blank	Total/NA	Water	3010A	
LCS 680-593154/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 593355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	7470A	
MB 680-593355/13-A	Method Blank	Total/NA	Water	7470A	
LCS 680-593355/14-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 593442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	6020A	593154
MB 680-593154/1-A	Method Blank	Total/NA	Water	6020A	593154
LCS 680-593154/2-A	Lab Control Sample	Total/NA	Water	6020A	593154

Metals

Analysis Batch: 593611

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	7470A	593355
MB 680-593355/13-A	Method Blank	Total/NA	Water	7470A	593355
LCS 680-593355/14-A	Lab Control Sample	Total/NA	Water	7470A	593355

General Chemistry

Analysis Batch: 475922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	SM 2540D	
MB 280-475922/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-475922/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-475922/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	
680-175952-1 DU	DCL LEACHATE_FAL19	Total/NA	Water	SM 2540D	

Prep Batch: 593434

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	Distill/Phenol	
MB 680-593434/1-A	Method Blank	Total/NA	Water	Distill/Phenol	
LCS 680-593434/2-A	Lab Control Sample	Total/NA	Water	Distill/Phenol	
680-175952-1 MS	DCL LEACHATE_FAL19	Total/NA	Water	Distill/Phenol	
680-175952-1 MSD	DCL LEACHATE_FAL19	Total/NA	Water	Distill/Phenol	

Analysis Batch: 593527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	9065	593434
MB 680-593434/1-A	Method Blank	Total/NA	Water	9065	593434
LCS 680-593434/2-A	Lab Control Sample	Total/NA	Water	9065	593434
680-175952-1 MS	DCL LEACHATE_FAL19	Total/NA	Water	9065	593434
680-175952-1 MSD	DCL LEACHATE_FAL19	Total/NA	Water	9065	593434

Prep Batch: 593678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	9012B	
MB 680-593678/1-A	Method Blank	Total/NA	Water	9012B	
LCS 680-593678/2-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 593763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	9012B	593678
MB 680-593678/1-A	Method Blank	Total/NA	Water	9012B	593678
LCS 680-593678/2-A	Lab Control Sample	Total/NA	Water	9012B	593678

Analysis Batch: 594244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-175952-1	DCL LEACHATE_FAL19	Total/NA	Water	9040C	
LCS 680-594244/5	Lab Control Sample	Total/NA	Water	9040C	

Lab Chronicle

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Leach 2019

Job ID: 680-175952-1

Client Sample ID: DCL LEACHATE_FAL19

Lab Sample ID: 680-175952-1

Date Collected: 10/23/19 10:30

Matrix: Water

Date Received: 10/25/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			1011.1 mL	1 mL	593693	10/30/19 17:29	EHS	TAL SAV
Total/NA	Analysis	8015C DRO		1			594200	11/02/19 15:09	JCK	TAL SAV
	Instrument ID: CSGAB1									
Total/NA	Prep	3520C			996.6 mL	5 mL	593275	10/28/19 14:30	EHS	TAL SAV
Total/NA	Analysis	8081B 8082A		1			593498	10/29/19 17:26	JCK	TAL SAV
	Instrument ID: CSGK									
Total/NA	Prep	3010A			50 mL	250 mL	593154	10/27/19 17:28	PG	TAL SAV
Total/NA	Analysis	6020A		1			593442	10/28/19 18:55	BJB	TAL SAV
	Instrument ID: ICPMSD									
Total/NA	Prep	7470A			50 mL	50 mL	593355	10/28/19 16:48	DB	TAL SAV
Total/NA	Analysis	7470A		1			593611	10/29/19 13:01	DB	TAL SAV
	Instrument ID: LEEMAN2									
Total/NA	Prep	9012B			6 mL	6 mL	593678	10/30/19 12:00	JER	TAL SAV
Total/NA	Analysis	9012B		1	6 mL	6 mL	593763	10/30/19 16:09	JER	TAL SAV
	Instrument ID: KONELAB4									
Total/NA	Analysis	9040C		1			594244	10/31/19 19:24	JAW	TAL SAV
	Instrument ID: MANTECH									
Total/NA	Prep	Distill/Phenol			6 mL	6 mL	593434	10/29/19 09:14	SM	TAL SAV
Total/NA	Analysis	9065		1	6 mL	6 mL	593527	10/29/19 12:31	SM	TAL SAV
	Instrument ID: KONELAB3									
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	475922	10/30/19 13:28	FRG	TAL DEN
	Instrument ID: NOEQUIP									

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAV = Eurofins TestAmerica, Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 366.7442, lekes@komangs.com

360325-Boston

COC # DCL-LEACH_FA

360325-Boston

KGS

Project Name: Long Term Monitoring	Laboratory: Test America	Event: KOMAN, Long Term Monitoring, DCL Leach 2019
Project Number: DEVNS-LTM	POC:	
WBS Code: Purchase Order 18-706	Ship to: Savannah, GA	

Comments:
M8015D (A) = Diesel Range
SW6010C (F) = AL Cd Cr Cu Pb Ni Ag Zn
SW7470A (A) = Mercury
SW8081B (A) = Pesticides
SW9012B (A) = Cyanide
SW9065 (A) = Phenolics

Equipment:

Code	Matrix
WL	Leachate
WQ	Water Quality Control Matrix

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
21	2 x 1 Liter, amber, glass, Cool to 0 - 6 °C
29	3 x 40mL glass VOA Vials, Cool < 6°C; adjust pH <2
33	2 x 1 liter, amber, glass, Cool < 6°C
45	1 x 500mL plastic, Cool < 6°C

					Analytical Test Method	SW6010C (F)	SW6020A - As	M8015D (A)	E624 - VOCs	E625 - SVOCs	A2540D - TSS						
	Event: KOMAN, Long Term Monitoring, DCL Leach 2019					**9**	**9**	**21**	**29**	**33**	**45**						
	Sample ID	Matrix	Date	Time	Samp Init.							Location ID	Sample Type	Depth (ft bgs) Top	Bottom	Comments	Cooler
2	DCL LEACHATE_FAL19	WL	10/23/19	1030	B/A	X	X	X	X	X	X	DCL LEACHATE	N1	0.00	0.00		1
3	TRIPBLANK_102319	WQ	10/23/19		B/A				X			FIELDQC	TB1	0.00	0.00		1
1																	
1																	
1																	
1																	
1																	
1																	
		Turnaround Time:															

680-175952 Chain of Custody

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time	Shipping Date / Carrier / Airbill Number
[signature]	10/23/19	1500	[signature]	10-23-19	1540	
[signature]	10-[illegible]-19	[illegible]				**Received by Laboratory:** *(Signature, Date, Time)* **& condition**
						[signature] 10/25/19 925 3.9/4.0

Page 1 of 2

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 366.7442, lekes@komangs.com

COC # DCL-LEACH_FA

Project Name: Long Term Monitoring	Laboratory:	Event: KOMAN, Long Term Monitoring, DCL Leach 2019
Project Number: DEVNS-LTM	POC:	
WBS Code: Purchase Order 18-706	Ship to:	

Comments:
M8015D (A) = Diesel Range
SW6010C (F) = AL Cd Cr Cu Pb Ni Ag Zn
SW7470A (A) = Mercury
SW8081B (A) = Pesticides
SW9012B (A) = Cyanide
SW9065 (A) = Phenolics

Equipment:

Code	Matrix
WL	Leachate

Code	Container/Preservative
1	2 x 1L amber glass bottles, Cool to <6°C
1	1 x 500 mL HDPE, 4 Degrees C
9	1 x 250mL plastic, HNO3, pH < 2, Cool < 6°C
11	1 x 500mL amber glass, H2SO4, Cool < 6°C
21	1 x 2-1 Liter, amber, glass, Cool < 6°C
48	1 x 250mL plastic, NaOH to pH >12, Cool < 6°C

						Analytical Test Method	SW8082A - PCB	SW9040C - pH	SW7470A (A)	SW9065 (A)	SW8081B (A)	SW9012B (A)					
Event: KOMAN, Long Term Monitoring, DCL Leach 2019							1	1	9	11	21	48					
	Sample ID	Matrix	Date	Time	Samp Init.								Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
2	DCL LEACHATE_FAL19	WL	10/23/19	1030	BrA		X	X	X	X	X	X	DCL LEACHATE	N1	0.00	0.00		1
		Turnaround Time: 21 Days																

Relinquished by: *(Signature)*	Date	Time
	10/23/19	1500
	10.24.19	1150

Received by: *(Signature)*	Date	Time
	10-23-19	1500

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* & condition
10/25/19 925 3.9/4.0

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 680-586846.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jerry.lanier@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 680-175952-1
Address: 4955 Yarrow Street,	Due Date Requested: 11/6/2019			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: LTM / DCL Leach 2019	Project #: 68016363			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540D/ Solids, Total Suspended (TSS)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
DCL LEACHATE_FAL19 (680-175952-1)	10/23/19	10:30 Eastern		Water			X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	10.25.19 1524			10/26/19 0900	TAEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.4, 0.1, HO, IR8, 57, 10/26/19

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175952-1

Login Number: 175952

List Source: Eurofins TestAmerica, Savannah

List Number: 1

Creator: Weston, Pamela

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

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175952-1

Login Number: 175952
List Number: 2
Creator: Zimmerman, Steven M

List Source: Eurofins TestAmerica, Denver
List Creation: 10/26/19 12:43 PM

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175952-1
Project/Site: LTM / DCL Leach 2019

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	SAVLAB	
Alabama	State	41450	06-30-20
Alaska	State	GA00006	06-30-20
Alaska (UST)	State	17-016	09-30-20
ANAB	Dept. of Defense ELAP	L2463	09-22-22
ANAB	DoD	L2463	09-22-22
ANAB	ISO/IEC 17025	L2463.01	09-22-22
ANAB	ISO/IEC 17025	L2463.01	09-22-22
Arizona	State	AZ0808	12-14-19
Arkansas DEQ	State	19-015-0	02-01-20
Arkansas DEQ	State Program	88-0692	02-01-20
California	State	2939	06-30-20
Colorado	State	GA00006	12-31-19
Connecticut	State	PH-0161	03-31-21
Florida	NELAP	E87052	06-30-20
GA Dept. of Agriculture	State Program	N/A	06-12-20
Georgia	State	E87052	06-30-20
Georgia	State Program	N/A	06-30-20
Georgia (DW)	State	803	06-30-20
Guam	State	19-007R	04-17-20
Hawaii	State	<cert No.>	06-30-20
Indiana	State	C-GA-02	06-30-20
Iowa	State	353	09-22-20
Kansas	NELAP	E-10322	10-15-20
Kentucky (DW)	State	KY90084	12-31-19
Kentucky (UST)	State	<cert No.>	06-30-20
Kentucky (UST)	State Program	18	06-30-20
Kentucky (WW)	State	KY90084	12-31-19
Kentucky (WW)	State Program	90084	12-31-19
Louisiana	NELAP	02011	06-30-20
Louisiana (DW)	State	LA009	12-31-19
Maine	State	GA00006	09-26-20
Maryland	State	250	12-31-19
Massachusetts	State	M-GA006	06-30-20
Massachusetts	State Program	M-GA006	06-30-20
Michigan	State	9925	06-30-20
Mississippi	State	<cert No.>	06-30-20
Mississippi	State Program	N/A	06-30-20
Nebraska	State	NE-OS-7-04	06-30-20
Nebraska	State Program	TestAmerica-Savannah	06-30-20
New Hampshire	NELAP	2096	05-29-20
New Hampshire	NELAP	2096	05-29-20
New Jersey	NELAP	GA769	06-30-20
New Mexico	State	GA00006	06-30-20
New York	NELAP	10842	04-01-20
North Carolina (DW)	State	13701	07-31-20
North Carolina (DW)	State Program	13701	07-31-20
North Carolina (WW/SW)	State	269	12-31-19
North Carolina (WW/SW)	State Program	269	12-31-19
Oklahoma	State	9984	08-31-20

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175952-1
Project/Site: LTM / DCL Leach 2019

Laboratory: Eurofins TestAmerica, Savannah (Continued)

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

Authority	Program	Identification Number	Expiration Date
Pennsylvania	NELAP	68-00474	06-30-20
Puerto Rico	State	GA00006	01-01-20
South Carolina	State	98001	06-30-20
Tennessee	State	02961	06-30-20
Texas	NELAP	T104704185-19-13	11-30-19 *
Texas	NELAP	T1047004185-19-3	11-30-19
Texas	TCEQ Water Supply	T104704185	09-23-20
US Fish & Wildlife	US Federal Programs	LE058448-0	07-31-20
USDA	US Federal Programs	P330-18-00313	10-29-21
Virginia	NELAP	10509	06-14-20
Washington	State	C805	06-10-20
West Virginia (DW)	State	9950C	12-31-19
West Virginia (DW)	State Program	9950C	12-31-19
West Virginia DEP	State	094	11-30-19
Wisconsin	State	999819810	08-31-20
Wyoming	State	8TMS-L	06-30-20 *
Wyoming	State Program	8TMS-L	06-30-16 *

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	DoD	2907.01	10-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

Laboratory Job ID: 680-175952-2
Client Project/Site: LTM / DCL Leach 2019

For:
KOMAN Government Solutions, LLC
293 Boston Post Road West
Suite 100
Marlborough, Massachusetts 01752

Attn: Laurie Ekes

Authorized for release by:
12/10/2019 9:58:38 AM

Jerry Lanier, Project Manager I
(912)250-0281
jerry.lanier@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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

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

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

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Job ID: 680-175952-2

Laboratory: Eurofins TestAmerica, Savannah

Narrative

Job Narrative
680-175952-2

Comments
No additional comments.

Receipt
The samples were received on 10/25/2019 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.0º C.

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

Subcontract Work
Methods Semivolatiles, Volatiles: These methods were subcontracted to Katahdin Analytical Services Inc. The subcontract laboratory certifications are different from that of the facility issuing the final report.

Sample Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Leach 2019

Job ID: 680-175952-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
680-175952-1	DCL LEACHATE_FAL19	Water	10/23/19 10:30	10/25/19 09:25	
680-175952-2	TRIPBLANK_102319	WQ	10/23/19 00:00	10/25/19 09:25	

Method Summary

Client: KOMAN Government Solutions, LLC
Project/Site: LTM / DCL Leach 2019

Job ID: 680-175952-2

Method	Method Description	Protocol	Laboratory
624	EPA 624 Purgeable Organic Compounds	EPA	
625	EPA 625 Base/Neutral and Acid Organics i	EPA	

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

= Katahdin Analytical Services Inc, PO BOX 540, 600 Technology Way, Scarborough, ME 04074

TEST AMERICA SAVANNAH
DEVENS-LTM
TM1332

KATAHDIN ANALYTICAL SERVICES
600 TECHNOLOGY WAY
SCARBOROUGH, ME 04074

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SAMPLE DATA PACKAGE

NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TEST AMERICA SAVANNAH
DEVENS-LTM
TM1332

Sample Receipt

The following samples were received on October 26, 2019 and were logged in under Katahdin Analytical Services work order number TM1332 for a hardcopy due date of November 07, 2019.

KATAHDIN Sample No.	TEST AMERICA SAVANNAH Sample Identification
TM1332-1	DCL LEACHATE_FAL19
TM1332-2	TRIPBLANK_102319

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAP standards unless otherwise noted in this narrative or in the Report of Analysis.

We certify that the test results provided in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation L2223.

Analytes which are reported but not listed on our ANAB scope of accreditation will be "^" flagged and the following language will be included in the case narrative for all DoD compliant work: "^" Indicates this analyte is not included on Katahdin Analytical Services DoD-ELAP Scope of Accreditation.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Heather Manz**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order TM1332 were analyzed in accordance with "Methods for Chemical Analysis of Water and Wastes", EPA 600/4-79-020, 1979 Revised 1983, U.S. EPA, and/or for the specific methods listed below or on the Report of Analysis.

EPA 624 Analysis

The initial calibration was calibrated at the following concentrations: 1, 5, 20, 50, 100, 75, and 150ug/l. The calibration verification standard (CV) was analyzed at a concentration 20 ug/l as

specified in the method. The acceptance criterion for the CV is that the concentration of each target analyte must be within a specific concentration range. The data system does not have a Form 7 for an EPA method 624 CV that lists the %D for each analyte. Instead, a Recovery Report sheet was used that lists the spiked Concentration added for each analyte, the Concentration Recovered, the % Recovered, and Limits. The Limits column lists the method acceptable concentration range. The % Recovered column is the concentration recovered divided by the Concentration Added. This column is disregarded. The Concentration Recovered is manually compared to the method acceptable concentration range.

The independent check standard (file C2883A) associated with the initial calibration on 10/29/2019 had low concentrations for eight target analytes that exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL. The Independent Check Report consists of the full list of spiked analytes, but only the client's list of target analytes are evaluated.

EPA 625 Analysis

The independent check standard (file U7552) associated with the initial calibration on 11/05/19 had no detected concentration for the target analyte benzidine, low concentrations for the target analytes bis(2-chloroisopropyl) ether, N-nitrosodiphenylamine, and 3,3'-dichlorobenzidine, and high concentrations for the target analytes 2,4-dinitrophenol and 4-nitrophenol. These concentrations exceeded the DoD QSM acceptance limit of ±20% of the expected value from the ICAL. The Independent Check Report consists of the full list of spiked analytes, but only the client's list of target analytes are evaluated.

The calibration verification standard (file U7573) had a low response for the target analyte 2-chloronaphthalene that resulted in a %D that was outside of the DoD QSM acceptance criteria of ±20%.

The method blank WG265240-1RA had a high recovery for one extraction surrogate that was outside of the laboratory established acceptance limits.

The LCS WG265240-2RA had a high recovery for the spiked target analyte benzidine that was outside of the nominal acceptance limits.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized the Quality Assurance Officer, or their designee, as verified by the following signature.

Leslie Dimond 12.05.19

Leslie Dimond
Quality Assurance Officer

Katahdin Analytical Services, Inc.

Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

Katahdin Analytical Services, LLC.

Sample Receipt Condition Report

Client: Test America	KAS PM: HHM	Sampled By: Client	
Project:	KIMS Entry By: JLB	Delivered By: FedEx	
KAS Work Order#: TM1332	KIMS Review By: SPL	Received By: CD	
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 10/26/19	1202

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.		✓			Temp (°C): 2.2° — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?					Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles: **Aqueous:** No bubble larger than a pea?	✓			✓	
Soil/Sediment: Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
Air: Refer to KAS COC for canister/flow controller requirements.	√ if air included				
7. Trip Blank present in cooler?	✓				
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2	✓				
Sulfide - >9				✓	
Cyanide – pH >12				✓	
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

TM1332

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 680-586861.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jerry.lanier@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 680-175952-2
Address: PO BOX 540, 600 Technology Way,	Due Date Requested: 11/6/2019			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: LTM / DCL Leach 2019	Project #: 68016363			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Volatiles)/ Volatiles	SUB (Semivolatiles)/ Semivolatiles	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
DCL LEACHATE_FAL19 (680-175952-1)	10/23/19	10:30 Eastern		Water			X	X	5	Per Rick Carr, our cost is $70, Per Rick Carr, our cost is $125
TRIPBLANK_102319 (680-175952-2)	10/23/19	Eastern		Water			X		2	Per Rick Carr, our cost is $70

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
		10.25.19 1608				
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
					10-26-19 1205	
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Oct. 28, 2019
11:06 AM

Quote/Incoming:

Login Number: TM1332

Account: TASAV001
Test America Savannah

Project: TASAV-DEVENS

NoWeb

Primary Report Address:
Jerry Lanier
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404
Jerry.Lanier@testamericainc.com

Primary Invoice Address:
Accounts Payable
Test America Savannah
5102 LaRoche Avenue

Savannah,GA 31404

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	FDS, DOD QSM 4.2 reporting with DOD limits. ND to PQL. "J" flag between MDL and PQL. Include LOD on form. Need LCS/LCSD. Follow MA MCP CAM. Include level 4 narrative.
CHECK NO.	:	
CLIENT PO#	:	680-175952
CLIENT PROJECT MANAGE	:	Jerry Lanier
CONTRACT	:	W912WJ-10-D-0003
COOLER TEMPERATURE	:	2.2
DELIVERY SERVICES	:	FedEx
EDD FORMAT	:	ECC-091317-TXT
LOGIN INITIALS	:	JCB
PM	:	HHM
PROJECT NAME	:	Devens-LTM
QC LEVEL	:	IV
REPORT INSTRUCTIONS	:	SDS needs all forms. Include Level 4 narrative and MCP forms (from Leslie). Send level 4 PDF & level 2 PDF. Level 2= SDP & SDS. Upload EDD to Ft. Devens Database. Email PDF, EDD, and invoice to Jerry & Amy.Ragnaldsen@testamericainc.com. No HC.

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM1332-1	DCL LEACHATE_FAL19	23-OCT-19 10:30	26-OCT-19			07-NOV-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	E624-S	06-NOV-19	40mL Vial+HCl		
Aqueous	S	E625	30-OCT-19	1L N-Amber Glass		

Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
TM1332-2	TRIPBLANK_102319	23-OCT-19 00:00	26-OCT-19			07-NOV-19	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Aqueous	S	E624-S	06-NOV-19	40mL Vial+HCl		

Total Samples: **2** ***Total Analyses:*** **3**

10/28/19

SAMPLE DATA SUMMARY PACKAGE

KATAHDIN ANALYTICAL SERVICES - ORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

* Compound recovery or percent RPD (relative percent difference) was outside of quality control limits.

D Indicates the result was obtained from analysis of a diluted sample. Surrogate recoveries may not be calculable.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

or

J Used for Pesticides, PCBs, Herbicides, Formaldehyde, Explosives and Method 504.1 analytes when there is a greater than 40% difference for detected concentrations between the two GC columns.

B Indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample.

C Indicates that the flagged compound did not meet DoD criteria in the corresponding daily calibration verification (CV).

L Indicates that the flagged compound did not meet DoD criteria in the corresponding Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) prepared and/or analyzed concurrently with the sample.

M Indicates that the flagged compound did not meet DoD criteria in the Matrix Spike and/or Matrix Spike Duplicate prepared and/or analyzed concurrently with the native sample.

N Presumptive evidence of a compound based on a mass spectral library search.

A Indicates that a tentatively identified compound is a suspected aldol-condensation product.

P Used for Pesticide/Aroclor analyte when there is a greater than 25% difference for detected concentrations between the two GC columns. (for CLP methods only).

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM1332-1
Client ID: DCL LEACHATE_FAL19
Project: Devens-LTM
SDG: TM1332
Lab File ID: C2888.D

Sample Date: 23-OCT-19
Received Date: 26-OCT-19
Extract Date: 30-OCT-19
Extracted By: JSS/CR
Extraction Method: EPA 624
Lab Prep Batch: WG265278

Analysis Date: 30-OCT-19
Analyst: JSS/CR
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 04-DEC-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	5.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	5.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	U	5.0	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	5.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.35	0.50
Methylene Chloride	U	10	ug/L	1	10	10.	1.1	2.5
trans-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.25	0.50
1,1-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.21	0.50
Chloroform	U	5.0	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Carbon Tetrachloride	U	5.0	ug/L	1	5	5.0	0.22	0.50
Benzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	5.0	ug/L	1	5	5.0	0.28	0.50
1,2-Dichloropropane	U	5.0	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.19	0.50
Toluene	U	5.0	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	5.0	ug/L	1	5	5.0	0.40	0.50
Dibromochloromethane	U	5.0	ug/L	1	5	5.0	0.30	0.50
Chlorobenzene	U	5.0	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Bromoform	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	5.0	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.15	0.50
cis-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Freon-113	U	5.0	ug/L	1	5	5.0	0.31	0.50
Acetone		15	ug/L	1	10	10.	2.2	2.5
Carbon Disulfide	U	5.0	ug/L	1	5	5.0	0.25	0.50

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029
http://www.katahdinlab.com

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM1332-1
Client ID: DCL LEACHATE_FAL19
Project: Devens-LTM
SDG: TM1332
Lab File ID: C2888.D

Sample Date: 23-OCT-19
Received Date: 26-OCT-19
Extract Date: 30-OCT-19
Extracted By: JSS/CR
Extraction Method: EPA 624
Lab Prep Batch: WG265278

Analysis Date: 30-OCT-19
Analyst: JSS/CR
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 04-DEC-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	5.0	ug/L	1	5	5.0	0.36	0.50
1,2-Dichloroethylene (Total)	U	10	ug/L	1	10	10.	0.21	1.0
2-Butanone	U	10	ug/L	1	10	10.	1.3	2.5
Cyclohexane	U	5.0	ug/L	1	5	5.0	0.31	0.50
4-Methyl-2-Pentanone	U	5.0	ug/L	1	5	5.0	1.3	2.5
2-Hexanone	U	5.0	ug/L	1	5	5.0	1.7	2.5
1,2-Dibromoethane	U	5.0	ug/L	1	5	5.0	0.22	0.50
Xylenes (Total)	U	15	ug/L	1	15	15.	0.25	1.5
M+P-Xylenes	U	10	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	5.0	ug/L	1	5	5.0	0.25	0.50
Styrene	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,2-Dibromo-3-Chloropropane	U	5.0	ug/L	1	5	5.0	0.50	0.50
1,2,4-Trichlorobenzene	U	5.0	ug/L	1	5	5.0	0.37	0.50
Isopropylbenzene	U	5.0	ug/L	1	5	5.0	0.23	0.50
Methyl Acetate	U	5.0	ug/L	1	5	5.0	0.53	0.75
Methylcyclohexane	U	5.0	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloroethane-D4		111.	%					
Toluene-D8		99.5	%					
P-Bromofluorobenzene		103.	%					
Dibromofluoromethane		96.3	%					

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM1332-2
Client ID: TRIPBLANK_102319
Project: Devens-LTM
SDG: TM1332
Lab File ID: C2887.D

Sample Date: 23-OCT-19
Received Date: 26-OCT-19
Extract Date: 30-OCT-19
Extracted By: JSS/CR
Extraction Method: EPA 624
Lab Prep Batch: WG265278

Analysis Date: 30-OCT-19
Analyst: JSS/CR
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 04-DEC-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	5.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	5.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	U	5.0	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	5.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.35	0.50
Methylene Chloride	U	10	ug/L	1	10	10.	1.1	2.5
trans-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.25	0.50
1,1-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.21	0.50
Chloroform	U	5.0	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Carbon Tetrachloride	U	5.0	ug/L	1	5	5.0	0.22	0.50
Benzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	5.0	ug/L	1	5	5.0	0.28	0.50
1,2-Dichloropropane	U	5.0	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.19	0.50
Toluene	U	5.0	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	5.0	ug/L	1	5	5.0	0.40	0.50
Dibromochloromethane	U	5.0	ug/L	1	5	5.0	0.30	0.50
Chlorobenzene	U	5.0	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Bromoform	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	5.0	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.15	0.50
cis-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Freon-113	U	5.0	ug/L	1	5	5.0	0.31	0.50
Acetone	U	10	ug/L	1	10	10.	2.2	2.5
Carbon Disulfide	U	5.0	ug/L	1	5	5.0	0.25	0.50

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM1332-2
Client ID: TRIPBLANK_102319
Project: Devens-LTM
SDG: TM1332
Lab File ID: C2887.D

Sample Date: 23-OCT-19
Received Date: 26-OCT-19
Extract Date: 30-OCT-19
Extracted By: JSS/CR
Extraction Method: EPA 624
Lab Prep Batch: WG265278

Analysis Date: 30-OCT-19
Analyst: JSS/CR
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 04-DEC-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Methyl tert-butyl Ether	U	5.0	ug/L	1	5	5.0	0.36	0.50
1,2-Dichloroethylene (Total)	U	10	ug/L	1	10	10.	0.21	1.0
2-Butanone	U	10	ug/L	1	10	10.	1.3	2.5
Cyclohexane	U	5.0	ug/L	1	5	5.0	0.31	0.50
4-Methyl-2-Pentanone	U	5.0	ug/L	1	5	5.0	1.3	2.5
2-Hexanone	U	5.0	ug/L	1	5	5.0	1.7	2.5
1,2-Dibromoethane	U	5.0	ug/L	1	5	5.0	0.22	0.50
Xylenes (Total)	U	15	ug/L	1	15	15.	0.25	1.5
M+P-Xylenes	U	10	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	5.0	ug/L	1	5	5.0	0.25	0.50
Styrene	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,2-Dibromo-3-Chloropropane	U	5.0	ug/L	1	5	5.0	0.50	0.50
1,2,4-Trichlorobenzene	U	5.0	ug/L	1	5	5.0	0.37	0.50
Isopropylbenzene	U	5.0	ug/L	1	5	5.0	0.23	0.50
Methyl Acetate	U	5.0	ug/L	1	5	5.0	0.53	0.75
Methylcyclohexane	U	5.0	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloroethane-D4		111.	%					
Toluene-D8		99.6	%					
P-Bromofluorobenzene		103.	%					
Dibromofluoromethane		95.5	%					

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Report of Analytical Results

Client:
Lab ID: WG265278-2
Client ID: Method Blank Sample
Project:
SDG: TM1332
Lab File ID: C2886.D

Sample Date:
Received Date:
Extract Date: 30-OCT-19
Extracted By: JSS/CR
Extraction Method: EPA 624
Lab Prep Batch: WG265278

Analysis Date: 30-OCT-19
Analyst: JSS/CR
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 04-DEC-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Dichlorodifluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
Chloromethane	U	5.0	ug/L	1	5	5.0	0.36	1.0
Vinyl Chloride	U	5.0	ug/L	1	5	5.0	0.25	1.0
Bromomethane	U	5.0	ug/L	1	5	5.0	0.49	1.0
Chloroethane	U	5.0	ug/L	1	5	5.0	0.55	1.0
Trichlorofluoromethane	U	5.0	ug/L	1	5	5.0	0.24	1.0
1,1-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.35	0.50
Methylene Chloride	U	10	ug/L	1	10	10.	1.1	2.5
trans-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.25	0.50
1,1-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.21	0.50
Chloroform	U	5.0	ug/L	1	5	5.0	0.32	0.50
1,1,1-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Carbon Tetrachloride	U	5.0	ug/L	1	5	5.0	0.22	0.50
Benzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,2-Dichloroethane	U	5.0	ug/L	1	5	5.0	0.20	0.50
Trichloroethene	U	5.0	ug/L	1	5	5.0	0.28	0.50
1,2-Dichloropropane	U	5.0	ug/L	1	5	5.0	0.25	0.50
Bromodichloromethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
cis-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.19	0.50
Toluene	U	5.0	ug/L	1	5	5.0	0.27	0.50
trans-1,3-Dichloropropene	U	5.0	ug/L	1	5	5.0	0.20	0.50
1,1,2-Trichloroethane	U	5.0	ug/L	1	5	5.0	0.33	0.50
Tetrachloroethene	U	5.0	ug/L	1	5	5.0	0.40	0.50
Dibromochloromethane	U	5.0	ug/L	1	5	5.0	0.30	0.50
Chlorobenzene	U	5.0	ug/L	1	5	5.0	0.22	0.50
Ethylbenzene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Bromoform	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,1,2,2-Tetrachloroethane	U	5.0	ug/L	1	5	5.0	0.38	0.50
1,3-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.26	0.50
1,4-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.24	0.50
1,2-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	0.15	0.50
cis-1,2-Dichloroethene	U	5.0	ug/L	1	5	5.0	0.21	0.50
Freon-113	U	5.0	ug/L	1	5	5.0	0.31	0.50
Acetone	U	10	ug/L	1	10	10.	2.2	2.5

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Report of Analytical Results

Client:
Lab ID: WG265278-2
Client ID: Method Blank Sample
Project:
SDG: TM1332
Lab File ID: C2886.D

Sample Date:
Received Date:
Extract Date: 30-OCT-19
Extracted By: JSS/CR
Extraction Method: EPA 624
Lab Prep Batch: WG265278

Analysis Date: 30-OCT-19
Analyst: JSS/CR
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA
Report Date: 04-DEC-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Carbon Disulfide	U	5.0	ug/L	1	5	5.0	0.25	0.50
Methyl tert-butyl Ether	U	5.0	ug/L	1	5	5.0	0.36	0.50
1,2-Dichloroethylene (Total)	U	10	ug/L	1	10	10.	0.21	1.0
2-Butanone	U	10	ug/L	1	10	10.	1.3	2.5
Cyclohexane	U	5.0	ug/L	1	5	5.0	0.31	0.50
4-Methyl-2-Pentanone	U	5.0	ug/L	1	5	5.0	1.3	2.5
2-Hexanone	U	5.0	ug/L	1	5	5.0	1.7	2.5
1,2-Dibromoethane	U	5.0	ug/L	1	5	5.0	0.22	0.50
Xylenes (Total)	U	15	ug/L	1	15	15.	0.25	1.5
M+P-Xylenes	U	10	ug/L	1	10	10.	0.59	1.0
o-Xylene	U	5.0	ug/L	1	5	5.0	0.25	0.50
Styrene	U	5.0	ug/L	1	5	5.0	0.23	0.50
1,2-Dibromo-3-Chloropropane	U	5.0	ug/L	1	5	5.0	0.50	0.50
1,2,4-Trichlorobenzene	U	5.0	ug/L	1	5	5.0	0.37	0.50
Isopropylbenzene	U	5.0	ug/L	1	5	5.0	0.23	0.50
Methyl Acetate	U	5.0	ug/L	1	5	5.0	0.53	0.75
Methylcyclohexane	U	5.0	ug/L	1	5	5.0	0.30	0.50
1,2-Dichloroethane-D4		109.	%					
Toluene-D8		100.	%					
P-Bromofluorobenzene		103.	%					
Dibromofluoromethane		94.4	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Devens-LTM **Matrix:** AQ
Lab Code: KAS **SDG:** TM1332

Client Sample ID	Lab Sample ID	Col. ID	BFB	#	DBF	#	DCA	#	TOL	#
DCL LEACHATE_FAL19	TM1332-1		103.		96.3		111.		99.5	
TRIPBLANK_102319	TM1332-2		103.		95.5		111.		99.6	
Laboratory Control S	WG265278-1		103.		97.4		108.		99.4	
Method Blank Sample	WG265278-2		103.		94.4		109.		100.	
Laboratory Control S	WG265278-5		103.		97.7		108.		99.2	

		QC Limits
DBF	DIBROMOFLUOROMETHANE	68-128
BFB	P-BROMOFLUOROBENZENE	56-133
TOL	TOLUENE-D8	65-128
DCA	1,2-DICHLOROETHANE-D4	67-135

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG265278-1
LCSD ID: WG265278-5
Project:
SDG: TM1332
Report Date: 04-DEC-19
LCS File ID: C2883.D

Received Date:
Extract Date: 29-OCT-19
Extracted By: JSS/CR
Extraction Method: EPA 624
Lab Prep Batch: WG265278
LCSD File ID: C2884.D

Analysis Date: 29-OCT-19
Analyst: JSS/CR
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Dichlorodifluoromethane	20.0	16.4	82.0	15.5	77.5	ug/L	6	20	60-140
Chloromethane	20.0	15.9	79.5	15.2	76.0	ug/L	4	20	0-273
Vinyl Chloride	20.0	15.3	76.5	14.4	72.0	ug/L	6	20	0-251
Bromomethane	20.0	13.4	67.0	12.6	63.0	ug/L	6	20	0-242
Chloroethane	20.0	21.1	106.	19.8	99.0	ug/L	6	20	14-230
Trichlorofluoromethane	20.0	19.1	95.5	18.5	92.5	ug/L	3	20	17-181
1,1-Dichloroethene	20.0	17.5	87.5	16.8	84.0	ug/L	4	20	0-234
Methylene Chloride	20.0	17.4	87.0	16.3	81.5	ug/L	6	20	0-221
trans-1,2-Dichloroethene	20.0	17.4	87.0	16.6	83.0	ug/L	5	20	54-156
1,1-Dichloroethane	20.0	18.0	90.0	17.3	86.5	ug/L	4	20	59-155
Chloroform	20.0	18.1	90.5	16.9	84.5	ug/L	7	20	51-138
1,1,1-Trichloroethane	20.0	16.6	83.0	15.6	78.0	ug/L	6	20	52-162
Carbon Tetrachloride	20.0	17.7	88.5	17.3	86.5	ug/L	2	20	70-140
Benzene	20.0	19.0	95.0	18.0	90.0	ug/L	5	20	37-151
1,2-Dichloroethane	20.0	19.9	99.5	19.7	98.5	ug/L	1	20	49-155
Trichloroethene	20.0	19.9	99.5	19.5	97.5	ug/L	2	20	71-157
1,2-Dichloropropane	20.0	18.7	93.5	18.5	92.5	ug/L	1	20	0-210
Bromodichloromethane	20.0	17.9	89.5	16.8	84.0	ug/L	6	20	35-155
cis-1,3-Dichloropropene	20.0	15.4	77.0	14.9	74.5	ug/L	3	20	0-227
Toluene	20.0	19.6	98.0	18.6	93.0	ug/L	5	20	47-150
trans-1,3-Dichloropropene	20.0	15.2	76.0	14.6	73.0	ug/L	4	20	17-183
1,1,2-Trichloroethane	20.0	15.6	78.0	15.2	76.0	ug/L	2	20	52-150
Tetrachloroethene	20.0	17.6	88.0	17.1	85.5	ug/L	3	20	64-148
Dibromochloromethane	20.0	16.5	82.5	15.7	78.5	ug/L	5	20	53-149
Chlorobenzene	20.0	18.3	91.5	17.6	88.0	ug/L	4	20	37-160
Ethylbenzene	20.0	18.8	94.0	18.0	90.0	ug/L	4	20	37-162
Bromoform	20.0	14.9	74.5	14.4	72.0	ug/L	3	20	45-169
1,1,2,2-Tetrachloroethane	20.0	18.5	92.5	17.1	85.5	ug/L	8	20	46-157
1,3-Dichlorobenzene	20.0	18.6	93.0	17.5	87.5	ug/L	6	20	59-156
1,4-Dichlorobenzene	20.0	17.9	89.5	16.8	84.0	ug/L	6	20	18-190
1,2-Dichlorobenzene	20.0	17.9	89.5	17.0	85.0	ug/L	5	20	18-190
cis-1,2-Dichloroethene	20.0	16.8	84.0	16.0	80.0	ug/L	5	20	60-140
Freon-113	20.0	18.6	93.0	18.0	90.0	ug/L	3	20	60-140
Acetone	20.0	19.9	99.5	19.0	95.0	ug/L	5	20	60-140

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LCS/LCSD Recovery Report

LCS ID: WG265278-1
LCSD ID: WG265278-5
Project:
SDG: TM1332
Report Date: 04-DEC-19
LCS File ID: C2883.D

Received Date:
Extract Date: 29-OCT-19
Extracted By: JSS/CR
Extraction Method: EPA 624
Lab Prep Batch: WG265278
LCSD File ID: C2884.D

Analysis Date: 29-OCT-19
Analyst: JSS/CR
Analysis Method: EPA 624
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
Carbon Disulfide	20.0	17.4	87.0	16.7	83.5	ug/L	4	20	60-140
Methyl tert-butyl Ether	20.0	18.0	90.0	17.2	86.0	ug/L	4	20	60-140
1,2-Dichloroethylene (Total)	40.0	34.1	85.2	32.5	81.2	ug/L	5	20	60-140
2-Butanone	20.0	15.0	75.0	16.6	83.0	ug/L	10	20	60-140
Cyclohexane	20.0	20.8	104.	19.8	99.0	ug/L	5	20	60-140
4-Methyl-2-Pentanone	20.0	17.2	86.0	15.5	77.5	ug/L	10	20	60-140
2-Hexanone	20.0	16.3	81.5	15.7	78.5	ug/L	4	20	60-140
1,2-Dibromoethane	20.0	18.5	92.5	17.7	88.5	ug/L	4	20	60-140
Xylenes (Total)	60.0	56.3	93.8	53.6	89.3	ug/L	5	20	60-140
M+P-Xylenes	40.0	38.2	95.5	36.1	90.2	ug/L	6	20	60-140
o-Xylene	20.0	18.2	91.0	17.4	87.0	ug/L	4	20	60-140
Styrene	20.0	18.2	91.0	17.6	88.0	ug/L	3	20	60-140
1,2-Dibromo-3-Chloropropane	20.0	13.2	66.0	12.2	61.0	ug/L	8	20	60-140
1,2,4-Trichlorobenzene	20.0	17.2	86.0	16.7	83.5	ug/L	3	20	60-140
Isopropylbenzene	20.0	18.8	94.0	17.8	89.0	ug/L	5	20	60-140
Methyl Acetate	20.0	16.8	84.0	16.4	82.0	ug/L	2	20	60-140
Methylcyclohexane	20.0	17.3	86.5	16.8	84.0	ug/L	3	20	60-140
1,2-Dichloroethane-D4			108.		108.				67-135
Toluene-D8			99.4		99.2				65-128
P-Bromofluorobenzene			103.		103.				56-133
Dibromofluoromethane			97.4		97.7				68-128

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Form 4
Method Blank Summary - VOA

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
Lab File ID : C2886.D
Instrument ID : GCMS-C
Heated Purge : No

SDG : TM1332
Lab Sample ID : WG265278-2
Date Analyzed : 30-OCT-19
Time Analyzed : 00:02

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG265278-1	C2883.D	10/29/19	22:19
Laboratory Control S	WG265278-5	C2884.D	10/29/19	22:53
TRIPBLANK_102319	TM1332-2	C2887.D	10/30/19	00:37
DCL LEACHATE_FAL19	TM1332-1	C2888.D	10/30/19	01:11

Form 5
Volatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
Lab File ID : CB175A.D
Instrument ID : GCMS-C

SDG : TM1332
Date Analyzed : 24-OCT-19
Time Analyzed : 08:13
Heated Purge : No

m/e	Ion Abundance Criteria	% Relative Abundance		
50	15.0 - 40.0% of mass 95	17.6		
75	30.0 - 60.0% of mass 95	49.1		
95	Base Peak, 100% relative abundance	100		
96	5.0 - 9.0% of mass 95	6.9		
173	Less than 2.0% of mass 174	0.8	1.23	1
174	Greater than 50.0% of mass 95	68.8		
175	5.0 - 9.0% of mass 174	4.9	7.10	1
176	95.0 - 101.0% of mass 174	66.8	97.10	1
177	5.0 - 9.0% of mass 176	4.2	6.32	2

1-Value is % mass 174 2-Value is % mass 176

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Initial Calibration	WG264881-4	C2791A.D	10/24/19	08:35
Initial Calibration	WG264881-3	C2792A.D	10/24/19	09:09
Initial Calibration	WG264881-2	C2793A.D	10/24/19	09:43
Initial Calibration	WG264881-1	C2794A.D	10/24/19	10:17
Initial Calibration	WG264881-6	C2795A.D	10/24/19	10:52
Initial Calibration	WG264881-5	C2796A.D	10/24/19	11:26
Initial Calibration	WG264881-7	C2797A.D	10/24/19	12:00

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

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sales@katahdinlab.com

Form 5
Volatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
Lab File ID : CB177A.D
Instrument ID : GCMS-C

SDG : TM1332
Date Analyzed : 29-OCT-19
Time Analyzed : 08:08
Heated Purge : No

m/e	Ion Abundance Criteria	% Relative Abundance		
50	15.0 - 40.0% of mass 95	18.7		
75	30.0 - 60.0% of mass 95	50.9		
95	Base Peak, 100% relative abundance	100		
96	5.0 - 9.0% of mass 95	6.9		
173	Less than 2.0% of mass 174	0.3	0.41	1
174	Greater than 50.0% of mass 95	64.7		
175	5.0 - 9.0% of mass 174	5.0	7.79	1
176	95.0 - 101.0% of mass 174	63.5	98.23	1
177	5.0 - 9.0% of mass 176	3.9	6.19	2

1-Value is % mass 174 2-Value is % mass 176

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Continuing Calibrati	WG265278-4	C2882.D	10/29/19	21:45
Laboratory Control S	WG265278-1	C2883.D	10/29/19	22:19
Independent Source	WG265278-6	C2883A.D	10/29/19	22:19
Laboratory Control S	WG265278-5	C2884.D	10/29/19	22:53
Method Blank Sample	WG265278-2	C2886.D	10/30/19	00:02
TRIPBLANK_102319	TM1332-2	C2887.D	10/30/19	00:37
DCL LEACHATE_FAL19	TM1332-1	C2888.D	10/30/19	01:11

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services
SDG: TM1332
Project : Devens-LTM
Instrument ID: GCMS-C
Lab File IDs : C2794a.D C2793a.D C2792a.D C2791a.D C2796a.D C2795a.D C2797a.D
Calibration Date(s): 24-OCT-19 08:35 24-OCT-19 12:00

	1.0000 Level 1	5.0000 Level 2	20.0000 Level 3	50.0000 Level 4	100.0000 Level 5	150.0000 Level 6	75.0000 Level 7		New Crv	b	m1	%RSD	Max %RSD	
Dichlorodifluoromethane	0.49519	0.60576	0.69459	0.69767	0.67634	0.65299	0.64113		AVG		0.63767	11.0706	35.00000	O
Chloromethane	0.65512	0.67829	0.71418	0.66938	0.68630	0.62820	0.62981		AVG		0.66590	4.65003	35.00000	O
Vinyl chloride	0.44909	0.49257	0.54988	0.53124	0.57974	0.48936	0.53731		AVG		0.51846	8.47745	35.00000	O
Bromomethane	0.23037	0.17421	0.16255	0.15089	0.15774	0.15080	0.14832		AVG		0.16784	17.2673	35.00000	O
Chloroethane	0.23110	0.23831	0.24920	0.24286	0.19412	0.23566	0.17806		AVG		0.22419	12.0592	35.00000	O
Trichlorofluoromethane	0.51049	0.56664	0.64940	0.64121	0.61034	0.64578	0.56247		AVG		0.59805	8.86051	35.00000	O
1,1-Dichloroethene	0.28063	0.35862	0.38434	0.34394	0.36005	0.34938	0.33347		AVG		0.34435	9.37518	35.00000	O
Methylene Chloride	6386	22712	81378	170208	387460	533119	273605		LNR	-0.01846	0.38135	0.99749	0.99000	O
trans-1,2-Dichloroethene	0.33484	0.41803	0.41423	0.36430	0.38797	0.37415	0.36216		AVG		0.37938	7.84629	35.00000	O
1,1-Dichloroethane	1.01567	1.21411	1.21355	1.09438	1.12326	1.07585	1.06422		AVG		1.11443	6.75526	35.00000	O
Chloroform	1.05313	1.23653	1.26261	1.10105	1.16741	1.13472	1.07706		AVG		1.14750	6.91354	35.00000	O
1,1,1-Trichloroethane	0.87155	1.05403	1.14172	1.05931	1.12569	1.08655	1.03660		AVG		1.05363	8.44551	35.00000	O
Carbon Tetrachloride	0.31067	0.39642	0.45615	0.43214	0.45818	0.44584	0.42045		AVG		0.41712	12.3919	35.00000	O
Benzene	1.23851	1.39775	1.41030	1.26337	1.31659	1.25034	1.22724		AVG		1.30059	5.86208	35.00000	O
1,2-Dichloroethane	0.48092	0.50081	0.50130	0.43934	0.45210	0.43612	0.42472		AVG		0.46219	6.88676	35.00000	O
Trichloroethene	0.30816	0.34790	0.35454	0.32233	0.32946	0.31088	0.30519		AVG		0.32549	6.01260	35.00000	O
1,2-Dichloropropane	0.29802	0.33126	0.35726	0.31474	0.32658	0.31251	0.30299		AVG		0.32048	6.25823	35.00000	O
Bromodichloromethane	0.33007	0.41146	0.46457	0.42466	0.45529	0.44146	0.41566		AVG		0.42045	10.5881	35.00000	O
cis-1,3-dichloropropene	0.40733	0.50658	0.55851	0.52702	0.54802	0.53054	0.50783		AVG		0.51226	9.77074	35.00000	O
Toluene	1.21593	1.40301	1.49382	1.33523	1.36350	1.28349	1.27214		AVG		1.33816	6.91497	35.00000	O
trans-1,3-Dichloropropene	0.33910	0.43138	0.49234	0.47589	0.49098	0.47496	0.45050		AVG		0.45074	11.9496	35.00000	O
1,1,2-Trichloroethane	0.25509	0.30327	0.30573	0.28468	0.28597	0.27833	0.27112		AVG		0.28346	6.24385	35.00000	O
Tetrachloroethene	0.25141	0.29024	0.31405	0.29652	0.29857	0.28847	0.27709		AVG		0.28805	6.83512	35.00000	O
Dibromochloromethane	0.22489	0.29989	0.35908	0.34851	0.37897	0.37185	0.34811		AVG		0.33304	16.2415	35.00000	O
Chlorobenzene	1.00291	1.11169	1.12211	1.00084	1.03287	0.98897	0.96735		AVG		1.03239	5.90751	35.00000	O
Ethylbenzene	0.46627	0.60820	0.63109	0.56515	0.56838	0.53711	0.53328		AVG		0.55850	9.66469	35.00000	O
Bromoform	0.09867	0.15474	0.19480	0.20785	0.21620	0.21809	0.20332		AVG		0.18481	23.5744	35.00000	O
1,1,2,2-Tetrachloroethane	0.69590	0.82448	0.88350	0.86068	0.83220	0.82413	0.80767		AVG		0.81836	7.29864	35.00000	O
1,3-Dichlorobenzene	1.47102	1.65103	1.65512	1.46284	1.48585	1.40024	1.39158		AVG		1.50253	7.23766	35.00000	O
1,4-Dichlorobenzene	1.54549	1.70954	1.65548	1.49640	1.54471	1.44747	1.43159		AVG		1.54724	6.67426	35.00000	O
1,2-Dichlorobenzene	1.42028	1.61706	1.59070	1.43062	1.47391	1.39736	1.37567		AVG		1.47223	6.46609	35.00000	O
cis-1,2-Dichloroethene	0.73025	0.75275	0.74335	0.64797	0.70045	0.66543	0.64372		AVG		0.69770	6.57044	35.00000	O
Freon-113	0.21799	0.24352	0.27825	0.28616	0.26056	0.26656	0.25268		AVG		0.25796	8.84202	35.00000	O
Acetone	0.09423	0.08915	0.10364	0.11577	0.07769	0.08399	0.07634		AVG		0.09154	15.6169	35.00000	O
Carbon Disulfide	0.70351	0.79015	0.88504	0.81778	0.91051	0.85913	0.83218		AVG		0.82833	8.25942	35.00000	O
Methyl tert-butyl ether	0.99673	1.19521	1.23563	1.14255	1.15339	1.13977	1.09187		AVG		1.13645	6.73339	35.00000	O

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services
SDG: TM1332
Project : Devens-LTM
Instrument ID: GCMS-C
Lab File IDs : C2794a.D C2793a.D C2792a.D C2791a.D C2796a.D C2795a.D C2797a.D
Calibration Date(s): 24-OCT-19 08:35 24-OCT-19 12:00

1,2-Dichloroethylene (total	+++++	+++++	+++++	+++++	+++++	+++++	+++++		AVG		0.000e+00	0.000e+(	35.00000	M (
2-Butanone	0.19375	0.20785	0.23797	0.25521	0.19165	0.19854	0.19729		AVG		0.21175	11.7328(	35.00000	O
Cyclohexane	0.74398	0.92974	1.02127	0.95723	0.99029	0.95533	0.93471		AVG		0.93322	9.57436	35.00000	O
4-methyl-2-pentanone	0.21818	0.26066	0.28960	0.28829	0.24878	0.24181	0.25423		AVG		0.25736	9.86474	35.00000	O
2-Hexanone	0.16474	0.19345	0.22784	0.23563	0.19641	0.19709	0.20261		AVG		0.20254	11.6030(	35.00000	O
1,2-Dibromoethane	0.24171	0.29807	0.31745	0.29082	0.29162	0.28562	0.28080		AVG		0.28659	8.02769	35.00000	O
Xylenes (total)	+++++	+++++	+++++	+++++	+++++	+++++	+++++		AVG		0.000e+00	0.000e+(	35.00000	M (
m+p-Xylenes	0.61023	0.74761	0.76281	0.68615	0.68049	0.63221	0.64575		AVG		0.68075	8.43604	35.00000	O
o-Xylene	0.58712	0.73668	0.74760	0.67388	0.69143	0.65876	0.65801		AVG		0.67907	7.95422	35.00000	O
Styrene	0.89503	1.15585	1.22561	1.10114	1.12358	1.05709	1.05118		AVG		1.08707	9.53931	35.00000	O
1,2-Dibromo-3-Chloropropane	0.10355	0.13126	0.16943	0.18299	0.17788	0.18241	0.17407		AVG		0.16023	19.1510{	35.00000	O
1,2,4-Trichlorobenzene	0.87624	0.99784	1.02222	0.95657	0.94949	0.87527	0.89419		AVG		0.93883	6.27380	35.00000	O
Isopropylbenzene	2.78204	3.51117	3.71202	3.45484	3.49607	3.31233	3.30282		AVG		3.36733	8.68769	35.00000	O
Methyl Acetate	0.24515	0.26988	0.27470	0.28460	0.22892	0.24672	0.23830		AVG		0.25547	8.16198	35.00000	O
Methylcyclohexane	0.90537	0.95351	1.08909	1.13319	1.09827	1.12016	1.05115		AVG		1.05010	8.33186	35.00000	O
Dibromofluoromethane	0.55364	0.55320	0.57041	0.55569	0.57167	0.57273	0.56324		AVG		0.56294	1.55868	35.00000	
1,2-Dichloroethane-D4	0.66719	0.66365	0.67228	0.65124	0.67274	0.66966	0.66483		AVG		0.66594	1.10428	35.00000	
Toluene-D8	1.26954	1.26624	1.26875	1.27282	1.26113	1.26045	1.27216		AVG		1.26730	0.39088	35.00000	
P-Bromofluorobenzene	0.50219	0.49873	0.49983	0.49420	0.50701	0.51145	0.49954		AVG		0.50185	1.14053	35.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

Data File: \\target_server\gg\chem\gcms-c.i\C102919.b\C2882.D
Report Date: 04-Dec-2019 15:01

Katahdin Analytical Services

RECOVERY REPORT

Client Name: Client SDG: SDGa02236
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: WG265278-4
Level: LOW Operator: JSS/CR
Data Type: MS DATA SampleType: LCS
SpikeList File: E624cc.spk Quant Type: ISTD
Sublist File: all.sub
Method File: \\target_server\gg\chem\gcms-c.i\C102919.b\C6A05(15).m
Misc Info: WG265278,WG264881-3,TM1332-2

SPIKE COMPOUND	CONC ADDED ug/l	CONC RECOVERED ug/l	% RECOVERED	LIMITS
2 Chloromethane	20.0	17.8	89.12*	0-41
3 Vinyl chloride	20.0	17.3	86.55*	1-39
4 Bromomethane	20.0	13.2	65.95*	3-37
5 Chloroethane	20.0	20.8	103.98*	8-32
6 Trichlorofluoromet	20.0	21.2	106.28*	10-30
9 1,1-Dichloroethene	20.0	19.1	95.73*	10-30
14 Methylene Chloride	20.0	18.8	93.85*	12-28
17 trans-1,2-Dichloro	20.0	18.9	94.68*	14-26
25 1,1-Dichloroethane	20.0	19.5	97.73*	15-26
29 cis-1,2-Dichloroet	20.0	17.5	87.33	0-100
34 Chloroform	20.0	18.6	92.87*	14-27
38 1,1,1-Trichloroeth	20.0	18.6	92.81*	15-25
35 Carbon Tetrachlori	20.0	19.6	98.02*	15-25
41 Benzene	20.0	19.2	95.98*	13-27
47 1,2-Dichloroethane	20.0	21.4	106.94*	14-26
48 Trichloroethene	20.0	19.8	99.08*	13-27
51 1,2-Dichloropropan	20.0	19.4	97.01*	7-33
52 Bromodichlorometha	20.0	18.8	93.78*	13-27
56 2-Chloroethylvinyl	20.0	17.1	85.55*	0-45
53 cis-1,3-dichloropr	20.0	16.5	82.66*	5-35
57 Toluene	20.0	19.8	98.79*	15-25
60 trans-1,3-Dichloro	20.0	16.1	80.70*	10-30
61 1,1,2-Trichloroeth	20.0	16.4	82.14*	14-26
59 Tetrachloroethene	20.0	18.4	92.26*	15-25
62 Dibromochlorometha	20.0	17.8	89.07*	14-27
67 Chlorobenzene	20.0	18.8	94.24*	13-27
68 Ethylbenzene	20.0	19.6	97.87*	12-28
74 Bromoform	20.0	16.6	83.21*	14-26
81 1,1,2,2-Tetrachlor	20.0	18.8	93.84*	12-28
90 1,3-Dichlorobenzen	20.0	18.5	92.74*	15-25
92 1,4-Dichlorobenzen	20.0	18.4	91.83*	13-27
95 1,2-Dichlorobenzen	20.0	18.6	92.90*	13-27

SURROGATE COMPOUND	AMOUNT ADDED ug/l	AMOUNT RECOVERED ug/l	% RECOVERED	LIMITS
$ 37 Dibromofluorometha	50.0	47.7	95.49	68-128

Data File: \\target_server\gg\chem\gcms-c.i\C102919.b\C2882.D
Report Date: 04-Dec-2019 15:01

SURROGATE COMPOUND	AMOUNT ADDED ug/l	AMOUNT RECOVERED ug/l	% RECOVERED	LIMITS
$ 45 1,2-Dichloroethane	50.0	53.5	106.94	67-135
$ 55 Toluene-D8	50.0	49.9	99.77	65-128
$ 76 P-Bromofluorobenze	50.0	51.5	102.99	56-133

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
Lab ID : WG264881-3
Lab File ID : C2792a.D

SDG: TM1332
Analytical Date: 10/24/19 09:09
Instrument ID: GCMS-C

		PENTAFLUOROBENZENE			1,4-DIFLUOROBENZENE			CHLOROBENZENE-D5		
		Area	#	RT	#	Area	#	RT	#	Area	#	RT	#
	Std .	450587		5.47		856345		6.23		748127		9.67	
	Upper Limit	901174		5.64		1712690		6.39		1496254		9.83	
	Lower Limit	225293.5		5.31		428172.5		6.06		374063.5		9.50	
Client Sample ID	Lab Sample ID												
Continuing Calibrati	WG265278-4	447968		5.47		800341		6.22		704442		9.66	
Laboratory Control S	WG265278-1	456640		5.47		824776		6.22		727157		9.66	
Laboratory Control S	WG265278-5	469581		5.47		846003		6.21		744465		9.66	
Method Blank Sample	WG265278-2	436604		5.47		772654		6.22		689529		9.66	
TRIPBLANK_102319	TM1332-2	429387		5.47		768330		6.22		689829		9.66	
DCL LEACHATE_FA	TM1332-1	411953		5.47		742949		6.22		664773		9.66	

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area
RT Upper Limit = + 10 seconds of internal standard RT
RT Lower Limit = - 10 seconds of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
Lab ID : WG264881-3
Lab File ID : C2792a.D

SDG: TM1332
Analytical Date: 10/24/19 09:09
Instrument ID: GCMS-C

		1,4-DICHLOROBENZENE-D4			
		Area	#	RT	#
	Std .	388734		12.54	
	Upper Limit	777468		12.71	
	Lower Limit	194367		12.38	
Client Sample ID	Lab Sample ID				
Continuing Calibrati	WG265278-4	366005		12.54	
Laboratory Control S	WG265278-1	379500		12.54	
Laboratory Control S	WG265278-5	390105		12.54	
Method Blank Sample	WG265278-2	347938		12.54	
TRIPBLANK_102319	TM1332-2	352050		12.54	
DCL LEACHATE_FA1	TM1332-1	347197		12.54	

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area
RT Upper Limit = + 10 seconds of internal standard RT
RT Lower Limit = - 10 seconds of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Report of Analytical Results

Client: Test America Savannah
Lab ID: TM1332-1
Client ID: DCL LEACHATE_FAL19
Project: Devens-LTM
SDG: TM1332
Lab File ID: U7577.D

Sample Date: 23-OCT-19
Received Date: 26-OCT-19
Extract Date: 29-OCT-19
Extracted By: AC/HD
Extraction Method: EPA 625
Lab Prep Batch: WG265240

Analysis Date: 06-NOV-19
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 02-DEC-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
N-Nitrosodimethylamine	U	4.8	ug/L	1	5	4.8	1.0	2.4
Phenol	U	4.8	ug/L	1	5	4.8	1.2	2.4
Bis(2-Chloroethyl)Ether	U	4.8	ug/L	1	5	4.8	0.94	2.4
2-Chlorophenol	U	4.8	ug/L	1	5	4.8	2.2	2.4
1,3-Dichlorobenzene	U	4.8	ug/L	1	5	4.8	1.6	2.4
1,4-Dichlorobenzene	U	4.8	ug/L	1	5	4.8	1.9	2.4
1,2-Dichlorobenzene	U	4.8	ug/L	1	5	4.8	1.7	2.4
Bis(2-Chloroisopropyl) Ether	U	4.8	ug/L	1	5	4.8	1.1	2.4
N-Nitroso-Di-N-Propylamine	U	4.8	ug/L	1	5	4.8	0.73	2.4
Hexachloroethane	U	4.8	ug/L	1	5	4.8	1.6	2.4
Nitrobenzene	U	4.8	ug/L	1	5	4.8	0.99	2.4
Isophorone	U	4.8	ug/L	1	5	4.8	0.79	2.4
2-Nitrophenol	U	4.8	ug/L	1	5	4.8	2.6	2.4
2,4-Dimethylphenol	U	4.8	ug/L	1	5	4.8	2.5	2.4
Bis(2-Chloroethoxy)Methane	U	4.8	ug/L	1	5	4.8	0.84	2.4
2,4-Dichlorophenol	U	4.8	ug/L	1	5	4.8	3.0	2.4
1,2,4-Trichlorobenzene	U	4.8	ug/L	1	5	4.8	1.7	2.4
Naphthalene	U	4.8	ug/L	1	5	4.8	1.7	2.4
Hexachlorobutadiene	U	4.8	ug/L	1	5	4.8	1.5	2.4
4-Chloro-3-Methylphenol	U	4.8	ug/L	1	5	4.8	2.1	2.4
Hexachlorocyclopentadiene	U	4.8	ug/L	1	5	4.8	0.70	2.4
2,4,6-Trichlorophenol	U	4.8	ug/L	1	5	4.8	2.4	2.4
2-Chloronaphthalene	U	4.8	ug/L	1	5	4.8	1.6	2.4
Dimethyl Phthalate	U	4.8	ug/L	1	5	4.8	0.86	2.4
2,6-Dinitrotoluene	U	4.8	ug/L	1	5	4.8	0.58	2.4
Acenaphthylene	U	4.8	ug/L	1	5	4.8	1.0	2.4
Acenaphthene	U	4.8	ug/L	1	5	4.8	1.3	2.4
2,4-Dinitrophenol	U	24	ug/L	1	25	24.	17.	12.
4-Nitrophenol	U	19	ug/L	1	20	19.	4.4	12.
2,4-Dinitrotoluene	U	4.8	ug/L	1	5	4.8	0.44	2.4
Diethylphthalate	U	4.8	ug/L	1	5	4.8	0.71	2.4
4-Chlorophenyl-Phenylether	U	4.8	ug/L	1	5	4.8	1.1	2.4
Fluorene	U	4.8	ug/L	1	5	4.8	0.92	2.4
4,6-Dinitro-2-Methylphenol	U	24	ug/L	1	25	24.	1.2	12.
N-Nitrosodiphenylamine	U	4.8	ug/L	1	5	4.8	0.51	2.4

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Report of Analytical Results

Client: Test America Savannah
Lab ID: TM1332-1
Client ID: DCL LEACHATE_FAL19
Project: Devens-LTM
SDG: TM1332
Lab File ID: U7577.D

Sample Date: 23-OCT-19
Received Date: 26-OCT-19
Extract Date: 29-OCT-19
Extracted By: AC/HD
Extraction Method: EPA 625
Lab Prep Batch: WG265240

Analysis Date: 06-NOV-19
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 02-DEC-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
4-Bromophenyl-Phenylether	U	4.8	ug/L	1	5	4.8	1.0	2.4
Hexachlorobenzene	U	4.8	ug/L	1	5	4.8	0.87	2.4
Pentachlorophenol	U	19	ug/L	1	20	19.	1.7	12.
Phenanthrene	U	4.8	ug/L	1	5	4.8	2.6	2.4
Anthracene	U	4.8	ug/L	1	5	4.8	0.71	2.4
Di-N-Butylphthalate	U	4.8	ug/L	1	5	4.8	0.72	2.4
Fluoranthene	U	4.8	ug/L	1	5	4.8	0.67	2.4
Benzidine	U	24	ug/L	1	25	24.	11.	12.
Pyrene	U	4.8	ug/L	1	5	4.8	0.59	2.4
Butylbenzylphthalate	U	4.8	ug/L	1	5	4.8	0.51	2.4
3,3'-Dichlorobenzidine	U	4.8	ug/L	1	5	4.8	1.8	2.4
Benzo(a)anthracene	U	4.8	ug/L	1	5	4.8	0.64	2.4
Chrysene	U	4.8	ug/L	1	5	4.8	0.86	2.4
Bis(2-Ethylhexyl)Phthalate	J	0.94	ug/L	1	5	4.8	0.53	2.4
Di-N-Octylphthalate	U	4.8	ug/L	1	5	4.8	0.64	2.4
Benzo(b)fluoranthene	U	4.8	ug/L	1	5	4.8	2.1	2.4
Benzo(k)fluoranthene	U	4.8	ug/L	1	5	4.8	2.3	2.4
Benzo(a)pyrene	U	4.8	ug/L	1	5	4.8	2.0	2.4
Indeno(1,2,3-cd)pyrene	U	4.8	ug/L	1	5	4.8	1.2	2.4
Dibenzo(a,h)anthracene	U	4.8	ug/L	1	5	4.8	1.2	2.4
Benzo(g,h,i)perylene	U	4.8	ug/L	1	5	4.8	1.3	2.4
2-Fluorophenol		34.9	%					
Phenol-d6		20.2	%					
Nitrobenzene-d5		83.5	%					
2-Fluorobiphenyl		81.0	%					
2,4,6-Tribromophenol		82.0	%					
Terphenyl-d14		54.5	%					

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Report of Analytical Results

Client:
Lab ID: WG265240-1RA
Client ID: Method Blank Sample
Project:
SDG: TM1332
Lab File ID: U7574.D

Sample Date:
Received Date:
Extract Date: 29-OCT-19
Extracted By: AC/HD
Extraction Method: EPA 625
Lab Prep Batch: WG265240

Analysis Date: 06-NOV-19
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 02-DEC-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
N-Nitrosodimethylamine	U	5.0	ug/L	1	5	5.0	1.0	2.5
Phenol	U	5.0	ug/L	1	5	5.0	1.3	2.5
Bis(2-Chloroethyl)Ether	U	5.0	ug/L	1	5	5.0	0.99	2.5
2-Chlorophenol	U	5.0	ug/L	1	5	5.0	2.3	2.5
1,3-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	1.7	2.5
1,4-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	2.0	2.5
1,2-Dichlorobenzene	U	5.0	ug/L	1	5	5.0	1.8	2.5
Bis(2-Chloroisopropyl) Ether	U	5.0	ug/L	1	5	5.0	1.2	2.5
N-Nitroso-Di-N-Propylamine	U	5.0	ug/L	1	5	5.0	0.77	2.5
Hexachloroethane	U	5.0	ug/L	1	5	5.0	1.7	2.5
Nitrobenzene	U	5.0	ug/L	1	5	5.0	1.0	2.5
Isophorone	U	5.0	ug/L	1	5	5.0	0.83	2.5
2-Nitrophenol	U	5.0	ug/L	1	5	5.0	2.7	2.5
2,4-Dimethylphenol	U	5.0	ug/L	1	5	5.0	2.6	2.5
Bis(2-Chloroethoxy)Methane	U	5.0	ug/L	1	5	5.0	0.88	2.5
2,4-Dichlorophenol	U	5.0	ug/L	1	5	5.0	3.1	2.5
1,2,4-Trichlorobenzene	U	5.0	ug/L	1	5	5.0	1.8	2.5
Naphthalene	U	5.0	ug/L	1	5	5.0	1.8	2.5
Hexachlorobutadiene	U	5.0	ug/L	1	5	5.0	1.6	2.5
4-Chloro-3-Methylphenol	U	5.0	ug/L	1	5	5.0	2.2	2.5
Hexachlorocyclopentadiene	U	5.0	ug/L	1	5	5.0	0.73	2.5
2,4,6-Trichlorophenol	U	5.0	ug/L	1	5	5.0	2.6	2.5
2-Chloronaphthalene	U	5.0	ug/L	1	5	5.0	1.7	2.5
Dimethyl Phthalate	U	5.0	ug/L	1	5	5.0	0.90	2.5
2,6-Dinitrotoluene	U	5.0	ug/L	1	5	5.0	0.61	2.5
Acenaphthylene	U	5.0	ug/L	1	5	5.0	1.1	2.5
Acenaphthene	U	5.0	ug/L	1	5	5.0	1.3	2.5
2,4-Dinitrophenol	U	25	ug/L	1	25	25.	18.	12.
4-Nitrophenol	U	20	ug/L	1	20	20.	4.6	12.
2,4-Dinitrotoluene	U	5.0	ug/L	1	5	5.0	0.46	2.5
Diethylphthalate	U	5.0	ug/L	1	5	5.0	0.75	2.5
4-Chlorophenyl-Phenylether	U	5.0	ug/L	1	5	5.0	1.1	2.5
Fluorene	U	5.0	ug/L	1	5	5.0	0.97	2.5
4,6-Dinitro-2-Methylphenol	U	25	ug/L	1	25	25.	1.2	12.

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Report of Analytical Results

Client:
Lab ID: WG265240-1RA
Client ID: Method Blank Sample
Project:
SDG: TM1332
Lab File ID: U7574.D

Sample Date:
Received Date:
Extract Date: 29-OCT-19
Extracted By: AC/HD
Extraction Method: EPA 625
Lab Prep Batch: WG265240

Analysis Date: 06-NOV-19
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA
Report Date: 02-DEC-19

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
N-Nitrosodiphenylamine	U	5.0	ug/L	1	5	5.0	0.54	2.5
4-Bromophenyl-Phenylether	U	5.0	ug/L	1	5	5.0	1.1	2.5
Hexachlorobenzene	U	5.0	ug/L	1	5	5.0	0.91	2.5
Pentachlorophenol	U	20	ug/L	1	20	20.	1.8	12.
Phenanthrene	U	5.0	ug/L	1	5	5.0	2.8	2.5
Anthracene	U	5.0	ug/L	1	5	5.0	0.75	2.5
Di-N-Butylphthalate	U	5.0	ug/L	1	5	5.0	0.76	2.5
Fluoranthene	U	5.0	ug/L	1	5	5.0	0.70	2.5
Benzidine	U	25	ug/L	1	25	25.	12.	12.
Pyrene	U	5.0	ug/L	1	5	5.0	0.62	2.5
Butylbenzylphthalate	U	5.0	ug/L	1	5	5.0	0.54	2.5
3,3'-Dichlorobenzidine	U	5.0	ug/L	1	5	5.0	1.8	2.5
Benzo(a)anthracene	U	5.0	ug/L	1	5	5.0	0.67	2.5
Chrysene	U	5.0	ug/L	1	5	5.0	0.90	2.5
Bis(2-Ethylhexyl)Phthalate	U	5.0	ug/L	1	5	5.0	0.56	2.5
Di-N-Octylphthalate	U	5.0	ug/L	1	5	5.0	0.67	2.5
Benzo(b)fluoranthene	U	5.0	ug/L	1	5	5.0	2.2	2.5
Benzo(k)fluoranthene	U	5.0	ug/L	1	5	5.0	2.5	2.5
Benzo(a)pyrene	U	5.0	ug/L	1	5	5.0	2.1	2.5
Indeno(1,2,3-cd)pyrene	U	5.0	ug/L	1	5	5.0	1.2	2.5
Dibenzo(a,h)anthracene	U	5.0	ug/L	1	5	5.0	1.2	2.5
Benzo(g,h,i)perylene	U	5.0	ug/L	1	5	5.0	1.3	2.5
2-Fluorophenol		51.1	%					
Phenol-d6		28.8	%					
Nitrobenzene-d5	*	92.1	%					
2-Fluorobiphenyl		84.3	%					
2,4,6-Tribromophenol		89.2	%					
Terphenyl-d14		93.5	%					

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Form 2
System Monitoring Compound Recovery

Lab Name: Katahdin Analytical Services **Project:** Devens-LTM **Matrix:** AQ
Lab Code: KAS **SDG:** TM1332

Client Sample ID	Lab Sample ID	Col. ID	2FBP	#	2FP	#	NBZ	#	PHL	#	TBP	#	TPH	#
DCL LEACHATE_FAL19	TM1332-1		81.0		34.9		83.5		20.2		82.0		54.5	
Method Blank Sample	WG265240-1RA		84.3		51.1		92.1	*	28.8		89.2		93.5	
Laboratory Control S	WG265240-2RA		89.2		47.6		89.2		28.1		94.4		82.6	
Laboratory Control S	WG265240-3RA		87.3		51.0		95.9		32.9		105.		84.0	

		QC Limits
2FBP	2-FLUOROBIPHENYL	43-90
TPH	TERPHENYL-D14	36-156
2FP	2-FLUOROPHENOL	10-80
TBP	2,4,6-TRIBROMOPHENOL	37-112
NBZ	NITROBENZENE-D5	41-91
PHL	PHENOL-D6	10-90

= Column to be used to flag recovery limits.
* = Values outside of contract required QC limits.
D= System Monitoring Compound diluted out.

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG265240-2RA
LCSD ID: WG265240-3RA
Project:
SDG: TM1332
Report Date: 02-DEC-19
LCS File ID: U7575.D

Received Date:
Extract Date: 29-OCT-19
Extracted By: AC/HD
Extraction Method: EPA 625
Lab Prep Batch: WG265240
LCSD File ID: U7576.D

Analysis Date: 06-NOV-19
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
N-Nitrosodimethylamine	50.0	32.4	64.8	31.8	63.6	ug/L	2	30	0-100
Phenol	100.	26.3	26.3	30.4	30.4	ug/L	14	30	5-112
Bis(2-Chloroethyl)Ether	50.0	44.6	89.2	46.2	92.4	ug/L	4	30	12-158
2-Chlorophenol	100.	78.5	78.5	87.4	87.4	ug/L	11	30	23-134
1,3-Dichlorobenzene	50.0	40.8	81.6	39.9	79.8	ug/L	2	30	0-172
1,4-Dichlorobenzene	50.0	41.0	82.0	42.0	84.0	ug/L	2	30	20-124
1,2-Dichlorobenzene	50.0	41.9	83.8	41.8	83.6	ug/L	0	30	32-129
Bis(2-Chloroisopropyl) Ether	50.0	33.9	67.8	33.7	67.4	ug/L	0	30	36-166
N-Nitroso-Di-N-Propylamine	50.0	40.1	80.2	39.9	79.8	ug/L	0	30	0-230
Hexachloroethane	50.0	39.5	79.0	40.3	80.6	ug/L	2	30	40-113
Nitrobenzene	50.0	47.3	94.6	47.1	94.2	ug/L	0	30	35-180
Isophorone	50.0	41.8	83.6	42.8	85.6	ug/L	2	30	21-196
2-Nitrophenol	100.	79.4	79.4	86.3	86.3	ug/L	8	30	29-182
2,4-Dimethylphenol	100.	100.	100.	102.	102.	ug/L	2	30	32-119
Bis(2-Chloroethoxy)Methane	50.0	36.2	72.4	36.9	73.8	ug/L	2	30	33-184
2,4-Dichlorophenol	100.	81.7	81.7	95.4	95.4	ug/L	15	30	39-135
1,2,4-Trichlorobenzene	50.0	41.6	83.2	43.5	87.0	ug/L	4	30	44-142
Naphthalene	50.0	43.6	87.2	45.0	90.0	ug/L	3	30	21-133
Hexachlorobutadiene	50.0	41.8	83.6	42.6	85.2	ug/L	2	30	24-116
4-Chloro-3-Methylphenol	100.	92.4	92.4	99.9	99.9	ug/L	8	30	22-147
Hexachlorocyclopentadiene	50.0	28.0	56.0	27.3	54.6	ug/L	2	30	0-100
2,4,6-Trichlorophenol	100.	80.4	80.4	83.6	83.6	ug/L	4	30	37-144
2-Chloronaphthalene	50.0	38.7	77.4	39.3	78.6	ug/L	2	30	60-118
Dimethyl Phthalate	50.0	49.7	99.4	50.9	102.	ug/L	2	30	0-112
2,6-Dinitrotoluene	50.0	51.9	104.	52.2	104.	ug/L	0	30	50-158
Acenaphthylene	50.0	41.4	82.8	42.3	84.6	ug/L	2	30	33-145
Acenaphthene	50.0	49.2	98.4	50.0	100.	ug/L	2	30	47-145
2,4-Dinitrophenol	100.	66.6	66.6	57.6	57.6	ug/L	14	30	0-191
4-Nitrophenol	100.	43.0	43.0	44.7	44.7	ug/L	4	30	0-132
2,4-Dinitrotoluene	50.0	57.1	114.	58.1	116.	ug/L	2	30	39-139
Diethylphthalate	50.0	54.5	109.	55.4	111.	ug/L	2	30	0-114
4-Chlorophenyl-Phenylether	50.0	49.3	98.6	48.2	96.4	ug/L	2	30	25-158
Fluorene	50.0	46.9	93.8	47.0	94.0	ug/L	0	30	59-121
4,6-Dinitro-2-Methylphenol	100.	78.5	78.5	72.2	72.2	ug/L	8	30	0-181

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Katahdin
ANALYTICAL SERVICES

LCS/LCSD Recovery Report

LCS ID: WG265240-2RA
LCSD ID: WG265240-3RA
Project:
SDG: TM1332
Report Date: 02-DEC-19
LCS File ID: U7575.D

Received Date:
Extract Date: 29-OCT-19
Extracted By: AC/HD
Extraction Method: EPA 625
Lab Prep Batch: WG265240
LCSD File ID: U7576.D

Analysis Date: 06-NOV-19
Analyst: JCG
Analysis Method: EPA 625
Matrix: AQ
% Solids: NA

Compound	Spike Amt	LCS Conc	LCS Rec (%)	LCSD Conc	LCSD Rec (%)	Conc Units	RPD (%)	RPD Limit	Limits
N-Nitrosodiphenylamine	50.0	35.6	71.2	35.9	71.8	ug/L	1	30	0-100
4-Bromophenyl-Phenylether	50.0	42.6	85.2	43.3	86.6	ug/L	2	30	53-127
Hexachlorobenzene	50.0	45.8	91.6	45.8	91.6	ug/L	0	30	0-152
Pentachlorophenol	100.	70.2	70.2	68.4	68.4	ug/L	2	30	14-176
Phenanthrene	50.0	43.4	86.8	43.2	86.4	ug/L	0	30	54-120
Anthracene	50.0	48.4	96.8	48.0	96.0	ug/L	1	30	27-133
Di-N-Butylphthalate	50.0	50.0	100.	47.7	95.4	ug/L	5	30	1-118
Fluoranthene	50.0	51.3	103.	50.1	100.	ug/L	2	30	26-137
Benzidine	100.	102.	102.*	89.8	89.8	ug/L	13	30	0-100
Pyrene	50.0	45.4	90.8	45.1	90.2	ug/L	1	30	52-115
Butylbenzylphthalate	50.0	48.6	97.2	47.7	95.4	ug/L	2	30	0-152
3,3'-Dichlorobenzidine	100.	132.	132.	104.	104.	ug/L	24	30	0-262
Benzo(a)anthracene	50.0	50.0	100.	48.8	97.6	ug/L	2	30	33-143
Chrysene	50.0	48.3	96.6	48.2	96.4	ug/L	0	30	17-168
Bis(2-Ethylhexyl)Phthalate	50.0	47.3	94.6	46.5	93.0	ug/L	2	30	8-158
Di-N-Octylphthalate	50.0	50.6	101.	49.6	99.2	ug/L	2	30	4-146
Benzo(b)fluoranthene	50.0	49.6	99.2	48.5	97.0	ug/L	2	30	24-159
Benzo(k)fluoranthene	50.0	49.8	99.6	50.5	101.	ug/L	1	30	11-162
Benzo(a)pyrene	50.0	50.1	100.	50.6	101.	ug/L	1	30	17-163
Indeno(1,2,3-cd)pyrene	50.0	49.4	98.8	47.5	95.0	ug/L	4	30	0-171
Dibenzo(a,h)anthracene	50.0	49.8	99.6	45.9	91.8	ug/L	8	30	0-227
Benzo(g,h,i)perylene	50.0	46.2	92.4	43.6	87.2	ug/L	6	30	0-219
2-Fluorophenol			47.6		51.0				10-80
Phenol-d6			28.1		32.9				10-90
Nitrobenzene-d5			89.2		95.9				41-91
2-Fluorobiphenyl			89.2		87.3				43-90
2,4,6-Tribromophenol			94.4		105.				37-112
Terphenyl-d14			82.6		84.0				36-156

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Method Blank Summary

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
Lab File ID : U7574.D
Instrument ID : GCMS-U
Matrix : AQ

SDG : TM1332
Lab Sample ID : WG265240-1RA
Date Extracted : 29-OCT-19
Date Analyzed : 06-NOV-19
Time Analyzed : 17:42

This Method Blank applies to the following samples, LCS, MS and MSD:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Laboratory Control S	WG265240-2RA	U7575.D	11/06/19	18:15
Laboratory Control S	WG265240-3RA	U7576.D	11/06/19	18:49
DCL LEACHATE_FAL19	TM1332-1	U7577.D	11/06/19	19:23

Form 5
Semivolatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
Lab File ID : UD237.D
Instrument ID : GCMS-U

SDG : TM1332
Date Analyzed : 05-NOV-19
Time Analyzed : 16:19

m/e	Ion Abundance Criteria	% Relative Abundance		
51	30.0 - 60.0% of mass 198	30.9		
68	Less than 2.0% of mass 69	0.5	1.11	1
69	Less than 100.0% of mass 198	42.1		
70	Less than 2.0% of mass 69	0.0	0.0	1
127	40.0 - 60.0% of mass 198	51.7		
197	Less than 1.0% of mass 198	0.0		
198	Base Peak, 100% relative abundance	100		
199	5.0 - 9.0% of mass 198	7.2		
275	10.0 - 30.0% of mass 198	23.9		
365	1.0 - 100.0% of mass 198	3.4		
441	0.0 - 100.0% of mass 443	10.2	75.00	2
442	40.0 - 100.0% of mass 198	66.8		
443	17.0 - 23.0% of mass 442	13.6	20.38	3

1-Value is % mass 69
2-Value is % mass 443
3-Value is % mass 442

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Initial Calibration	WG265787-4	U7547.D	11/05/19	16:39
Initial Calibration	WG265787-2	U7548.D	11/05/19	17:12
Initial Calibration	WG265787-3	U7549.D	11/05/19	17:47
Initial Calibration	WG265787-5	U7550.D	11/05/19	18:21
Initial Calibration	WG265787-6	U7551.D	11/05/19	18:55
Independent Source	WG265787-7	U7552.D	11/05/19	19:29

1 2 3 4 5 6 7 8 9

Form 5
Semivolatile Organic Instrument Performance Check

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
Lab File ID : UD239.D
Instrument ID : GCMS-U

SDG : TM1332
Date Analyzed : 06-NOV-19
Time Analyzed : 16:16

m/e	Ion Abundance Criteria	% Relative Abundance		
51	30.0 - 60.0% of mass 198	30.8		
68	Less than 2.0% of mass 69	0.2	0.52	1
69	Less than 100.0% of mass 198	42.2		
70	Less than 2.0% of mass 69	0.0	0.0	1
127	40.0 - 60.0% of mass 198	51.8		
197	Less than 1.0% of mass 198	0.2		
198	Base Peak, 100% relative abundance	100		
199	5.0 - 9.0% of mass 198	7.1		
275	10.0 - 30.0% of mass 198	23.9		
365	1.0 - 100.0% of mass 198	3.2		
441	0.0 - 100.0% of mass 443	9.3	74.31	2
442	40.0 - 100.0% of mass 198	63.6		
443	17.0 - 23.0% of mass 442	12.5	19.67	3

1-Value is % mass 69 2-Value is % mass 443
3-Value is % mass 442

This check applies to the following samples, LCS, MS, MSD and standards:

Client Sample ID	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
Continuing Calibrati	WG265896-3	U7573.D	11/06/19	17:08
Method Blank Sample	WG265240-1RA	U7574.D	11/06/19	17:42
Laboratory Control S	WG265240-2RA	U7575.D	11/06/19	18:15
Laboratory Control S	WG265240-3RA	U7576.D	11/06/19	18:49
DCL LEACHATE_FAL19	TM1332-1	U7577.D	11/06/19	19:23

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Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM1332
Project : Devens-LTM **Instrument ID:** GCMS-U
Lab File IDs : U7548.D U7549.D U7547.D U7550.D U7551.D **Column ID:**
Calibration Date(s): 05-NOV-19 16:39 05-NOV-19 18:55

	5.0000 Level 1	30.0000 Level 2	60.0000 Level 3	100.0000 Level 4	125.0000 Level 5		New Crv	b	m1	m2	%RSD	Max %RSD	
N-Nitrosodimethylamine	0.52334	0.52531	0.57514	0.56322	0.58337		AVG		0.55408		5.07063	35.00000	O
Phenol	1.17115	1.21980	1.38591	1.48563	1.57753		AVG		1.36800		12.59632	35.00000	O
Bis(2-Chloroethyl)ether	0.84825	0.82400	0.90714	0.92711	0.96158		AVG		0.89362		6.33714	35.00000	O
2-Chlorophenol	1.02517	1.03863	1.14098	1.15081	1.19323		AVG		1.10977		6.65864	35.00000	O
1,3-Dichlorobenzene	1.36493	1.25828	1.38917	1.40607	1.44289		AVG		1.37227		5.08339	35.00000	O
1,4-Dichlorobenzene	1.31279	1.28159	1.37987	1.39961	1.44380		AVG		1.36353		4.82329	35.00000	O
1,2-Dichlorobenzene	1.23187	1.23566	1.38778	1.41070	1.46747		AVG		1.34670		7.95304	35.00000	O
Bis(2-chloroisopropyl) Ethe	0.76673	0.79020	0.87647	0.91057	0.95291		AVG		0.85938		9.20488	35.00000	O
N-Nitroso-di-n-propylamine	0.71190	0.71875	0.83287	0.99158	1.03568		AVG		0.85816		17.55486	35.00000	O
Hexachloroethane	0.52358	0.51889	0.58488	0.58925	0.60245		AVG		0.56381		6.99451	35.00000	O
Nitrobenzene	0.32212	0.30191	0.32843	0.31442	0.37107		AVG		0.32759		8.00989	35.00000	O
Isophorone	0.56648	0.58484	0.62610	0.63664	0.62420		AVG		0.60765		4.98488	35.00000	O
2-Nitrophenol	0.16545	0.18421	0.19134	0.19192	0.19396		AVG		0.18538		6.32883	35.00000	O
2,4-Dimethylphenol	0.29783	0.32183	0.35315	0.36306	0.35440		AVG		0.33806		8.10284	35.00000	O
Bis(2-Chloroethoxy)methane	0.32149	0.31494	0.46124	0.47523	0.46532		AVG		0.40764		20.07352	35.00000	O
2,4-Dichlorophenol	0.25153	0.28734	0.31934	0.32785	0.32614		AVG		0.30244		10.85668	35.00000	O
1,2,4-Trichlorobenzene	0.31951	0.33568	0.36224	0.36838	0.39264		AVG		0.35569		8.04905	35.00000	O
Naphthalene	0.86043	0.86750	0.95548	0.96613	0.97029		AVG		0.92397		5.96307	35.00000	O
Hexachlorobutadiene	0.21830	0.21551	0.22864	0.24002	0.25942		AVG		0.23238		7.71693	35.00000	O
4-Chloro-3-Methylphenol	0.23994	0.27584	0.28410	0.28101	0.27566		AVG		0.27131		6.59752	35.00000	O
Hexachlorocyclopentadiene	0.28502	0.37895	0.44290	0.51381	0.53959		AVG		0.43205		23.94313	35.00000	O
2,4,6-Trichlorophenol	0.31815	0.33321	0.37972	0.40538	0.41787		AVG		0.37087		11.81193	35.00000	O
2-Chloronaphthalene	0.89896	1.09273	1.12796	1.27132	1.35783		AVG		1.14976		15.35660	35.00000	O
Dimethyl Phthalate	1.17937	1.19567	1.25866	1.13048	1.19724		AVG		1.19229		3.84990	35.00000	O
2,6-Dinitrotoluene	0.24138	0.26541	0.27835	0.27859	0.25939		AVG		0.26462		5.82927	35.00000	O
Acenaphthylene	1.49094	1.51051	1.62045	1.65971	1.65401		AVG		1.58712		5.07716	35.00000	O
Acenaphthene	0.95615	0.96934	1.02029	1.07338	1.07816		AVG		1.01946		5.56479	35.00000	O
2,4-Dinitrophenol	0.09541	0.12139	0.14160	0.12210	0.12113		AVG		0.12033		13.64692	35.00000	O
4-Nitrophenol	0.11825	0.15333	0.15267	0.12897	0.12126		AVG		0.13490		12.59104	35.00000	O
2,4-Dinitrotoluene	0.32858	0.33694	0.35143	0.29061	0.28751		AVG		0.31901		8.95255	35.00000	O
Diethylphthalate	1.18627	1.16662	1.22901	1.03832	0.99914		AVG		1.12387		8.85906	35.00000	O
Fluorene	1.10311	1.10148	1.30966	1.24638	1.26443		AVG		1.20501		8.01332	35.00000	O
4-Chlorophenyl-phenylether	0.56339	0.56544	0.64007	0.66972	0.66553		AVG		0.62083		8.49491	35.00000	O
4,6-Dinitro-2-Methylphenol	0.09729	0.10127	0.12668	0.12486	0.13549		AVG		0.11712		14.37239	35.00000	O
N-Nitrosodiphenylamine	0.56043	0.56593	0.66322	0.72740	0.80876		AVG		0.66515		16.00143	35.00000	O
4-Bromophenyl-phenylether	0.21204	0.21613	0.24343	0.27945	0.31205		AVG		0.25262		16.92795	35.00000	O
Hexachlorobenzene	0.21942	0.22200	0.24117	0.27236	0.28342		AVG		0.24767		11.74891	35.00000	O

Form 6
Initial Calibration Summary

Lab Name : Katahdin Analytical Services **SDG:** TM1332
Project : Devens-LTM **Instrument ID:** GCMS-U
Lab File IDs : U7548.D U7549.D U7547.D U7550.D U7551.D **Column ID:**
Calibration Date(s): 05-NOV-19 16:39, 05-NOV-19 18:55

Pentachlorophenol	0.10456	0.11929	0.14075	0.14495	0.15435		AVG		0.13278		15.3225	35.00000	O
Phenanthrene	0.93120	0.91191	1.01513	1.06522	1.13822		AVG		1.01234		9.28224	35.00000	O
Anthracene	0.91776	0.90512	0.95112	0.95568	0.99916		AVG		0.94577		3.88976	35.00000	O
Di-n-butylphthalate	1.24673	1.11117	1.04187	1.03280	1.07659		AVG		1.10183		7.87042	35.00000	O
Fluoranthene	0.89168	0.84435	0.83505	0.87374	0.92861		AVG		0.87469		4.31164	35.00000	O
Benzidine	0.19233	0.29594	0.28532	0.24689	0.24549		AVG		0.25319		16.1183	35.00000	O
Pyrene	1.92322	1.63080	1.66291	1.49739	1.60023		AVG		1.66291		9.51380	35.00000	O
Butylbenzylphthalate	0.81231	0.64195	0.62713	0.57347	0.63109		AVG		0.65719		13.7976	35.00000	O
Benzo(a)anthracene	1.08052	1.06292	1.15554	1.10941	1.19010		AVG		1.11970		4.70607	35.00000	O
3,3'-Dichlorobenzidine	0.24226	0.30347	0.35630	0.35505	0.36782		AVG		0.32498		16.1560	35.00000	O
Chrysene	0.97536	0.97198	0.97457	0.95663	1.02108		AVG		0.97992		2.47307	35.00000	O
bis(2-Ethylhexyl)phthalate	1.06633	0.83286	0.85298	0.77844	0.84992		AVG		0.87611		12.6089	35.00000	O
Di-n-octylphthalate	2.09031	1.69893	1.71050	1.98911	2.11555		AVG		1.92088		10.5663	35.00000	O
Benzo(b)fluoranthene	1.16243	1.10469	1.17894	1.29070	1.35380		AVG		1.21811		8.32958	35.00000	O
Benzo(k)fluoranthene	1.12581	1.06181	1.13000	1.17178	1.24290		AVG		1.14646		5.81952	35.00000	O
Benzo(a)pyrene	0.83729	0.87196	0.93170	0.98707	1.02312		AVG		0.93023		8.30882	35.00000	O
Indeno(1,2,3-cd)pyrene	0.47841	0.58327	0.64024	0.64264	0.66229		AVG		0.60137		12.4358	35.00000	O
Dibenzo(a,h)anthracene	0.41788	0.54465	0.62320	0.63954	0.64827		AVG		0.57471		16.8395	35.00000	O
Benzo(g,h,i)perylene	0.59701	0.63770	0.67383	0.68080	0.69604		AVG		0.65708		6.06151	35.00000	O
2-Fluorophenol	0.84965	0.87094	1.01658	1.00173	1.03812		AVG		0.95540		9.22132	35.00000	
Phenol-D6	1.03974	1.12507	1.30470	1.36729	1.44531		AVG		1.25642		13.4662	35.00000	
Nitrobenzene-D5	0.32983	0.32705	0.36755	0.36692	0.38463		AVG		0.35520		7.16711	35.00000	
2-Fluorobiphenyl	1.22005	1.16095	1.32321	1.39871	1.48124		AVG		1.31683		9.86053	35.00000	
2,4,6-Tribromophenol	0.13937	0.15348	0.17798	0.16532	0.16134		AVG		0.15950		8.97865	35.00000	
Terphenyl-D14	1.36109	1.17894	1.28461	1.13829	1.22377		AVG		1.23734		7.10939	35.00000	

Legend: O = Kept Original Curve
Y = Failed Minimum RF
W = Failed %RSD Value

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
Lab ID : WG265896-3
Lab File ID : U7573.D
Initial Calibration Date(s): 11/05/19 16:39 11/05/19 18:55

SDG: TM1332
Analytical Date: 11/06/19 17:08
Instrument ID: GCMS-U
Column ID:

	Compound	RRF/Amount	RF60	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type	
10	N-Nitrosodimethylamine	0.55408	0.57727	0.010	4.18634	20.00000	Averaged	
20	Phenol	1.36800	1.35032	0.010	-1.29261	20.00000	Averaged	
30	Bis(2-Chloroethyl)ether	0.89362	0.85827	0.010	-3.95586	20.00000	Averaged	
40	2-Chlorophenol	1.10977	1.09837	0.010	-1.02646	20.00000	Averaged	
50	1,3-Dichlorobenzene	1.37227	1.34162	0.010	-2.23326	20.00000	Averaged	
60	1,4-Dichlorobenzene	1.36353	1.33892	0.010	-1.80541	20.00000	Averaged	
70	1,2-Dichlorobenzene	1.34670	1.33976	0.010	-0.51521	20.00000	Averaged	
80	Bis(2-chloroisopropyl) Ethe	0.85938	0.83357	0.010	-3.00339	20.00000	Averaged	
90	N-Nitroso-di-n-propylamine	0.85816	0.79524	0.050	-7.33176	20.00000	Averaged	
100	Hexachloroethane	0.56381	0.55377	0.010	-1.78107	20.00000	Averaged	
110	Nitrobenzene	0.32759	0.32141	0.010	-1.88878	20.00000	Averaged	
120	Isophorone	0.60765	0.59133	0.010	-2.68608	20.00000	Averaged	
130	2-Nitrophenol	0.18538	0.18248	0.010	-1.56185	20.00000	Averaged	
140	2,4-Dimethylphenol	0.33806	0.33794	0.010	-0.03485	20.00000	Averaged	
150	Bis(2-Chloroethoxy)methane	0.40764	0.41917	0.010	2.82788	20.00000	Averaged	
160	2,4-Dichlorophenol	0.30244	0.30723	0.010	1.58426	20.00000	Averaged	
170	1,2,4-Trichlorobenzene	0.35569	0.34737	0.010	-2.33802	20.00000	Averaged	
180	Naphthalene	0.92397	0.90742	0.010	-1.79085	20.00000	Averaged	
190	Hexachlorobutadiene	0.23238	0.22737	0.010	-2.15274	20.00000	Averaged	
200	4-Chloro-3-Methylphenol	0.27131	0.27379	0.010	0.91172	20.00000	Averaged	
210	Hexachlorocyclopentadiene	0.43205	0.44314	0.050	2.56534	20.00000	Averaged	
220	2,4,6-Trichlorophenol	0.37087	0.36163	0.010	-2.48946	20.00000	Averaged	
230	2-Chloronaphthalene	1.14976	0.88387	0.010	-23.12554	20.00000	Averaged	<-
240	Dimethyl Phthalate	1.19229	1.16845	0.010	-1.99923	20.00000	Averaged	
250	2,6-Dinitrotoluene	0.26462	0.26570	0.010	0.40614	20.00000	Averaged	
260	Acenaphthylene	1.58712	1.55040	0.010	-2.31398	20.00000	Averaged	
270	Acenaphthene	1.01946	0.97404	0.010	-4.45553	20.00000	Averaged	
280	2,4-Dinitrophenol	0.12033	0.13238	0.050	10.01892	20.00000	Averaged	
290	4-Nitrophenol	0.13490	0.15505	0.050	14.94365	20.00000	Averaged	
300	2,4-Dinitrotoluene	0.31901	0.33111	0.010	3.79303	20.00000	Averaged	
310	Diethylphthalate	1.12387	1.15730	0.010	2.97462	20.00000	Averaged	
320	4-Chlorophenyl-phenylether	0.62083	0.62287	0.010	0.32800	20.00000	Averaged	
330	Fluorene	1.20501	1.26939	0.010	5.34247	20.00000	Averaged	
340	4,6-Dinitro-2-Methylphenol	0.11712	0.11635	0.010	-0.65792	20.00000	Averaged	
350	N-Nitrosodiphenylamine	0.66515	0.62731	0.010	-5.68899	20.00000	Averaged	
360	4-Bromophenyl-phenylether	0.25262	0.23461	0.010	-7.12919	20.00000	Averaged	
370	Hexachlorobenzene	0.24767	0.23456	0.010	-5.29535	20.00000	Averaged	
380	Pentachlorophenol	0.13278	0.13951	0.010	5.06540	20.00000	Averaged	
390	Phenanthrene	1.01234	0.98632	0.010	-2.57035	20.00000	Averaged	
400	Anthracene	0.94577	0.91795	0.010	-2.94103	20.00000	Averaged	
410	Di-n-butylphthalate	1.10183	1.03161	0.010	-6.37347	20.00000	Averaged	

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Form 7
Calibration Verification Summary

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
SDG: TM1332
Lab ID : WG265896-3
Analytical Date: 11/06/19 17:08
Lab File ID : U7573.D
Instrument ID: GCMS-U
Initial Calibration Date(s): 11/05/19 16:39 11/05/19 18:55
Column ID:

	Compound	RRF/Amount	RF60	Min RRF	%D/ %Drift	Max %D/ %Drift	Curve Type
420	Fluoranthene	0.87469	0.86323	0.010	-1.30994	20.00000	Averaged
430	Benzidine	0.25319	0.23131	0.010	-8.64104	20.00000	Averaged
440	Pyrene	1.66291	1.46582	0.010	-11.85217	20.00000	Averaged
450	Butylbenzylphthalate	0.65719	0.59133	0.010	-10.02080	20.00000	Averaged
460	3,3'-Dichlorobenzidine	0.32498	0.32575	0.010	0.23564	20.00000	Averaged
470	Benzo(a)anthracene	1.11970	1.08843	0.010	-2.79219	20.00000	Averaged
480	Chrysene	0.97992	0.90831	0.010	-7.30798	20.00000	Averaged
490	bis(2-Ethylhexyl)phthalate	0.87611	0.77453	0.010	-11.59406	20.00000	Averaged
500	Di-n-octylphthalate	1.92088	2.01744	0.010	5.02668	20.00000	Averaged
510	Benzo(b)fluoranthene	1.21811	1.27052	0.010	4.30254	20.00000	Averaged
520	Benzo(k)fluoranthene	1.14646	0.93003	0.010	-18.87814	20.00000	Averaged
530	Benzo(a)pyrene	0.93023	0.93003	0.010	-0.02114	20.00000	Averaged
540	Indeno(1,2,3-cd)pyrene	0.60137	0.52773	0.010	-12.24623	20.00000	Averaged
550	Dibenzo(a,h)anthracene	0.57471	0.50611	0.010	-11.93566	20.00000	Averaged
560	Benzo(g,h,i)perylene	0.65708	0.55217	0.010	-15.96531	20.00000	Averaged
2	2-Fluorophenol	0.95540	0.98581	0.010	3.18245	20.00000	Averaged
3	Phenol-D6	1.25642	1.25660	0.010	0.01431	20.00000	Averaged
16	Nitrobenzene-D5	0.35520	0.34612	0.010	-2.55473	20.00000	Averaged
34	2-Fluorobiphenyl	1.31683	1.26446	0.010	-3.97688	20.00000	Averaged
51	2,4,6-Tribromophenol	0.15950	0.17278	0.010	8.32925	20.00000	Averaged
63	Terphenyl-D14	1.23734	1.17347	0.010	-5.16173	20.00000	Averaged

*** = Compound out of QC criteria**

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://katahdinlab.com
sales@katahdinlab.com

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
Lab ID : WG265787-4
Lab File ID : U7547.D

SDG: TM1332
Analytical Date: 11/05/19 16:39
Instrument ID: GCMS-U

		1,4-DICHLOROBENZENE-D4			NAPHTHALENE-D8			ACENAPHTHENE-D10		
		Area	#	RT	#	Area	#	RT	#	Area	#	RT	#
	Std .	186582		7.13		640606		8.82		409606		11.19	
	Upper Limit	373164		7.30		1281212		8.99		819212		11.36	
	Lower Limit	93291		6.97		320303		8.65		204803		11.02	
Client Sample ID	Lab Sample ID												
Continuing Calibrati	WG265896-3	230579		7.13		809688		8.82		531336		11.19	
Method Blank Sample	WG265240-1RA	245072		7.13		816829		8.82		500096		11.18	
Laboratory Control S	WG265240-2RA	228323		7.13		777880		8.82		486303		11.18	
Laboratory Control S	WG265240-3RA	228151		7.14		771436		8.82		497220		11.18	
DCL LEACHATE_FA	TM1332-1	222745		7.13		742957		8.82		451187		11.18	

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area
RT Upper Limit = + 10 seconds of internal standard RT
RT Lower Limit = - 10 seconds of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Form 8
Internal Standard Area and RT Summary

Lab Name : Katahdin Analytical Services
Project : Devens-LTM
Lab ID : WG265787-4
Lab File ID : U7547.D

SDG: TM1332
Analytical Date: 11/05/19 16:39
Instrument ID: GCMS-U

		PHENANTHRENE-D10			CHRYSENE-D12			PERYLENE-D12		
		Area	#	RT	#	Area	#	RT	#	Area	#	RT	#
	Std .	617280		13.20		293772		17.05		223952		20.09	
	Upper Limit	1234560		13.36		587544		17.21		447904		20.26	
	Lower Limit	308640		13.03		146886		16.88		111976		19.92	
Client Sample ID	Lab Sample ID												
Continuing Calibrati	WG265896-3	822365		13.20		471086		17.05		298788		20.09	
Method Blank Sample	WG265240-1RA	783420		13.18		392152		17.04		293388		20.08	
Laboratory Control S	WG265240-2RA	802376		13.19		450352		17.05		291191		20.08	
Laboratory Control S	WG265240-3RA	826418		13.19		455663		17.05		301515		20.09	
DCL LEACHATE_FA	TM1332-1	712233		13.18		292468		17.04		213052		20.08	

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area
RT Upper Limit = + 10 seconds of internal standard RT
RT Lower Limit = - 10 seconds of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

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http://katahdinlab.com
sales@katahdinlab.com

Eurofins TestAmerica, Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

TN1332

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 680-586861.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jerry.lanier@testamericainc.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Katahdin Analytical Services		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 680-175952-2
Address: PO BOX 540, 600 Technology Way,	Due Date Requested: 11/6/2019			
City: Scarborough	TAT Requested (days):			
State, Zip: ME, 04074				
Phone:	PO #:			
Email:	WO #:			
Project Name: LTM / DCL Leach 2019	Project #: 68016363			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Volatiles)/ Volatiles	SUB (Semivolatiles)/ Semivolatiles	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
DCL LEACHATE_FAL19 (680-175952-1)	10/23/19	10:30 Eastern		Water			X	X	5	Per Rick Carr, our cost is $70, Per Rick Carr, our cost is $125
TRIPBLANK_102319 (680-175952-2)	10/23/19	Eastern		Water			X		2	Per Rick Carr, our cost is $70

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
		10.25.19 1608				
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
					10-26-19 1202	
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

12/10/2019

360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 366.7442, lekes@komangs.com

360325-Boston

COC # DCL-LEACH_FA

360325-Boston

KGS

Project Name: Long Term Monitoring	Laboratory: Test America	Event: KOMAN, Long Term Monitoring, DCL Leach 2019
Project Number: DEVNS-LTM	POC:	
WBS Code: Purchase Order 18-706	Ship to: Savannah, GA	

Comments:
M8015D (A) = Diesel Range
SW6010C (F) = AL Cd Cr Cu Pb Ni Ag Zn
SW7470A (A) = Mercury
SW8081B (A) = Pesticides
SW9012B (A) = Cyanide
SW9065 (A) = Phenolics

Equipment:

Code	Matrix
WL	Leachate
WQ	Water Quality Control Matrix

Code	Container/Preservative
9	1 x 250mL, plastic, HNO3, pH < 2; Cool < 6°C
21	2 x 1 Liter, amber, glass, Cool to 0 - 6 °C
29	3 x 40mL glass VOA Vials, Cool < 6°C; adjust pH <2
33	2 x 1 liter, amber, glass, Cool < 6°C
45	1 x 500mL plastic, Cool < 6°C

	Analytical Test Method	SW6010C (F)	SW6020A - As	M8015D (A)	E624 - VOCs	E625 - SVOCs	A2540D - TSS
Event: KOMAN, Long Term Monitoring, DCL Leach 2019		9	9	21	29	33	45

	Sample ID	Matrix	Date	Time	Samp Init.	SW6010C (F)	SW6020A - As	M8015D (A)	E624 - VOCs	E625 - SVOCs	A2540D - TSS	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
2	DCL LEACHATE_FAL19	WL	10/23/19	1030	BrA	X	X	X	X	X	X	DCL LEACHATE	N1	0.00	0.00		1
3	TRIPBLANK_102319	WQ	10/23/19		BrA				X			FIELDQC	TB1	0.00	0.00		1
1																	
1																	
1																	
1																	
1																	
1																	
		Turnaround Time:															

680-175952 Chain of Custody

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
[signature]	10/23/19	1500	[signature]	10-23-19	1540
[signature]	10-23-19	1700			

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**

[signature] 10/25/19 925
3.9/4.0

360325-Boston

CHAIN-OF-CUSTODY RECORD

KOMAN Government Services, LLC
Laurie Ekes
293 Boston Post Road West, Suite 100, Marlborough, MA 01752
(508) 366.7442, lekes@komangs.com

COC # DCL-LEACH_FA

Project Name: Long Term Monitoring	Laboratory:	Event: KOMAN, Long Term Monitoring, DCL Leach 2019
Project Number: DEVNS-LTM	POC:	
WBS Code: Purchase Order 18-706	Ship to:	

Comments:
M8015D (A) = Diesel Range
SW6010C (F) = AL Cd Cr Cu Pb Ni Ag Zn
SW7470A (A) = Mercury
SW8081B (A) = Pesticides
SW9012B (A) = Cyanide
SW9065 (A) = Phenolics

Equipment:

Code	Matrix
WL	Leachate

Code	Container/Preservative
1	2 x 1L amber glass bottles, Cool to <6°C
1	1 x 500 mL HDPE, 4 Degrees C
9	1 x 250mL plastic, HNO3, pH < 2, Cool < 6°C
11	1 x 500mL amber glass, H2SO4, Cool < 6°C
21	1 x 2-1 Liter, amber, glass, Cool < 6°C
48	1 x 250mL plastic, NaOH to pH >12, Cool < 6°C

						Analytical Test Method	SW8082A - PCB	SW9040C - pH	SW7470A (A)	SW9065 (A)	SW8081B (A)	SW9012B (A)					
Event: KOMAN, Long Term Monitoring, DCL Leach 2019							1	1	9	11	21	48					
	Sample ID	Matrix	Date	Time	Samp Init.								Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Comments	Cooler
2	DCL LEACHATE_FAL19	WL	10/23/19	1030	BrA		X	X	X	X	X	X	DCL LEACHATE	N1	0.00	0.00		1
		Turnaround Time: 21 Days																

Relinquished by: *(Signature)*	Date	Time
	10/23/19	1500
	10.24.19	1150

Received by: *(Signature)*	Date	Time
	10-23-19	1500

Shipping Date / Carrier / Airbill Number

Received by Laboratory: *(Signature, Date, Time)* **& condition**
10/25/19 925
3.9/4.0

Login Sample Receipt Checklist

Client: KOMAN Government Solutions, LLC

Job Number: 680-175952-2

Login Number: 175952
List Number: 1
Creator: Weston, Pamela

List Source: Eurofins TestAmerica, Savannah

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

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175952-2
Project/Site: LTM / DCL Leach 2019

Laboratory: Eurofins TestAmerica, Savannah

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	SAVLAB	
Alabama	State	41450	06-30-20
Alaska	State	GA00006	06-30-20
Alaska (UST)	State	17-016	09-30-20
ANAB	Dept. of Defense ELAP	L2463	09-22-22
ANAB	ISO/IEC 17025	L2463.01	09-22-22
Arkansas DEQ	State	19-015-0	02-01-20
California	State	2939	06-30-20
Colorado	State	GA00006	12-31-19
Connecticut	State	PH-0161	03-31-21
Florida	NELAP	E87052	06-30-20
GA Dept. of Agriculture	State Program	N/A	06-12-20
Georgia	State	E87052	06-30-20
Georgia (DW)	State	803	06-30-20
Guam	State	19-007R	04-17-20
Hawaii	State	<cert No.>	06-30-20
Indiana	State	C-GA-02	06-30-20
Iowa	State	353	09-22-20
Kansas	NELAP	E-10322	10-15-20
Kentucky (DW)	State	KY90084	12-31-19
Kentucky (UST)	State	<cert No.>	06-30-20
Kentucky (WW)	State	KY90084	12-31-19
Louisiana	NELAP	02011	06-30-20
Louisiana (DW)	State	LA009	12-31-19
Maine	State	GA00006	09-26-20
Maryland	State	250	12-31-19
Massachusetts	State	M-GA006	06-30-20
Michigan	State	9925	06-30-20
Mississippi	State	<cert No.>	06-30-20
Nebraska	State	NE-OS-7-04	06-30-20
New Hampshire	NELAP	2096	05-29-20
New Jersey	NELAP	GA769	06-30-20
New Mexico	State	GA00006	06-30-20
New York	NELAP	10842	04-01-20
North Carolina (DW)	State	13701	07-31-20
North Carolina (WW/SW)	State	269	12-31-19
Oklahoma	State	9984	08-31-20
Pennsylvania	NELAP	68-00474	06-30-20
Puerto Rico	State	GA00006	01-01-20
South Carolina	State	98001	06-30-20
Tennessee	State	02961	06-30-20
Texas	NELAP	T1047004185-19-14	11-30-19
Texas	TCEQ Water Supply	T104704185	09-23-20
US Fish & Wildlife	US Federal Programs	LE058448-0	07-31-20
USDA	US Federal Programs	P330-18-00313	10-29-21
Virginia	NELAP	10509	06-14-20
Washington	State	C805	06-10-20
West Virginia (DW)	State	9950C	12-31-19
West Virginia DEP	State	094	11-30-19
Wisconsin	State	999819810	08-31-20

Accreditation/Certification Summary

Client: KOMAN Government Solutions, LLC
Job ID: 680-175952-2
Project/Site: LTM / DCL Leach 2019

Laboratory: Eurofins TestAmerica, Savannah (Continued)

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

Authority	Program	Identification Number	Expiration Date
Wyoming	State	8TMS-L	06-30-20 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

APPENDIX C
ANALYTICAL DATA VALIDATION REPORTS

C.1

Data Validation Reports
Spring 2019 LTM Event

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
SDG:	6801674912
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Solutions, LLC, Marlborough, MA
Project Manager:	Jim Ropp
Contract Laboratory(ies):	TestAmerica Laboratories, Inc., Savannah, GA
Data Review Contractor:	KOMAN Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	May 29, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW6010C	SW6020A	SW8260B
32M-01-13XBR_SPR19	680-167491-8	Water	Field Sample/N	X	X	X
32M-01-14XOB_SPR19	680-167491-11	Water	Field Sample/N	X	X	X
32M-01-17XBR_SPR19	680-167491-7	Water	Field Sample/N	X	X	X
32M-01-18XBR_SPR19	680-167491-9	Water	Field Sample/N	X	X	X
32M-DUP01_SPR19	680-167491-10	Water	Field Duplicate/FD	X	X	X
32M-TRIP BLANK	680-167491-2	Water	Trip Blank/TB			X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Solutions, LLC, Marlborough, MA; analyses were performed by TestAmerica Laboratories, Inc., Savannah, GA and were reported under sample delivery group (SDG) 6801674912. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Field Duplicate RPD
- Blank
- MS Recovery
- Interference Check Sample A - Negative
- Interference Check Sample A
- MS RPD
- Surrogate
- Calibration Blank
- Calibration Blank - Negative
- Interference Check Sample AB
- Test Hold Time
- Prep Hold Time
- LCS RPD
- Continuing Calibration Verification
- LCS Recovery
- Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 410 results (98.09%) out of the 418 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains Spring 2019 LTM samples from AOC32/43A.

Analytical Method	Data Reviewer Comment
SW6010C	Samples were submitted for Total Mn analysis only.
SW6020A	Samples were submitted for Total As analysis only.
SW8260B	The laboratory noted that several samples were analyzed outside of holding times due to instrument failure and re-analysis at dilution.

May 29, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, KOMAN Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

May 29, 2019

Reviewed by Sherri Pullar, Senior Scientist, KOMAN Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW6010C, Total, Field Duplicate RPD

Field duplicate analyses are performed in order to assess sample collection/laboratory precision for each sample matrix. Summary forms were evaluated and compared to electronic data deliverables. Field duplicate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
32M-01-18XBR_SPR19 (N)/ 680-167491-10	Manganese	33.96	< 30	< 30	rpd	J/None	D3	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Field Duplicate RPD for SW6010C, Total

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-18XBR_SPR19	N	Manganese	10.0	2200	2200 J		ug/l	D3
32M-DUP01_SPR19	FD	Manganese	10.0	3100	3100 J		ug/l	D3

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260B, Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
MB 680-567432/8 (LB)/ MB 680-567432/8	Carbon disulfide	0.6380	< 0.43	< 2	ug/l	U/None	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8260B, Continuing Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCV 680-567432/2 (CV)/ CCV 680-567432/2	Chloromethane	120.4	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-567432/2 (CV)/ CCV 680-567432/2	Dichlorodifluoromethane	63.80	80 - 120	80 - 120	percent	J/UJ	V2	
CCV 680-567541/5 (CV)/ CCV 680-567541/5	Bromomethane	121.6	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-567541/5 (CV)/ CCV 680-567541/5	Trichlorofluoromethane	127.2	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-567541/5 (CV)/ CCV 680-567541/5	Dichlorodifluoromethane	136.8	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-567541/5 (CV)/ CCV 680-567541/5	Vinyl acetate	76.40	80 - 120	80 - 120	percent	J/UJ	V2	
CCV 680-568059/3 (CV)/ CCV 680-568059/3	Chloroethane	121.0	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-568059/3 (CV)/ CCV 680-568059/3	Chloromethane	164.6	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567432/28 (CV)/ CCVC 680-567432/28	Chloromethane	154.6	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567432/28 (CV)/ CCVC 680-567432/28	Bromomethane	71.00	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567432/28 (CV)/ CCVC 680-567432/28	2,2-Dichloropropane	73.80	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567432/28 (CV)/ CCVC 680-567432/28	Carbon tetrachloride	74.20	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567432/28 (CV)/ CCVC 680-567432/28	Dichlorodifluoromethane	74.20	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	Toluene	122.8	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	1,2-Dibromoethane (EDB)	125.0	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	1,1,2-Trichloroethane	125.6	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	Dibromochloromethane	126.4	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	Chloroethane	131.4	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	Vinyl chloride	136.2	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	Bromomethane	141.8	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	Tetrachloroethene (PCE)	142.4	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	Trichlorofluoromethane	150.0	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	Dichlorodifluoromethane	151.2	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	Vinyl acetate	54.20	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	1,1,2,2-Tetrachloroethane	61.80	80 - 120	80 - 120	percent	J/UJ	V2	

Quality Control Outliers for test method SW8260B, Continuing Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	2,2-Dichloropropane	65.60	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	1,2,3-Trichloropropane	65.80	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	2-Butanone (MEK)	71.20	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	Bromobenzene	72.80	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	Chloromethane	74.00	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	4-Chlorotoluene	74.20	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	1,2,4-Trimethylbenzene	75.40	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	2-Chlorotoluene	75.80	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	1,3,5-Trimethylbenzene	76.20	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	n-Propylbenzene	78.60	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-567541/31 (CV)/ CCVC 680-567541/31	sec-Butylbenzene	79.60	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-568059/31 (CV)/ CCVC 680-568059/31	Chloroethane	129.6	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-568059/31 (CV)/ CCVC 680-568059/31	Chloromethane	169.6	80 - 120	80 - 120	percent	J/None	V2	
CCVC 680-568059/31 (CV)/ CCVC 680-568059/31	2,2-Dichloropropane	59.00	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-568059/31 (CV)/ CCVC 680-568059/31	Vinyl acetate	69.30	80 - 120	80 - 120	percent	J/UJ	V2	
CCVC 680-568059/31 (CV)/ CCVC 680-568059/31	Dichlorodifluoromethane	73.20	80 - 120	80 - 120	percent	J/UJ	V2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Continuing Calibration Verification for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR_SPR19	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	V2/H1
32M-01-14XOB_SPR19	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	V2/H1
32M-01-17XBR_SPR19	N	Dichlorodifluoromethane	1.00	1.00 U Q	1.00 UJ		ug/l	V2/H1
32M-01-17XBR_SPR19	N	Carbon tetrachloride	1.00	0.500 U	0.500 UJ		ug/l	V2/H1
32M-DUP01_SPR19	FD	Dichlorodifluoromethane	20.0	20.0 U Q	20.0 UJ		ug/l	V2/H1
32M-DUP01_SPR19	FD	Carbon tetrachloride	20.0	10.0 U	10.0 UJ		ug/l	V2/H1

Qualified Results associated with the Continuing Calibration Verification for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-TRIP BLANK	TB	Vinyl acetate	2.00	2.00 U	2.00 UJ		ug/l	V2/H1/I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260B, Field Duplicate RPD

Field duplicate analyses are performed in order to assess sample collection/laboratory precision for each sample matrix. Summary forms were evaluated and compared to electronic data deliverables. Field duplicate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
32M-01-18XBR_SPR19 (N)/ 680-167491-10	cis-1,2-Dichloroethene	26.00	< 2	< 2	ug/l	J/None	D3	
32M-01-18XBR_SPR19 (N)/ 680-167491-10	1,2-Dichloroethene	26.00	< 4	< 4	ug/l	J/None	D3	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Field Duplicate RPD for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-DUP01_SPR19	FD	1,2-Dichloroethene	40.0	26.0 J D	26.0 J	-	ug/l	D3/H1/TR
32M-DUP01_SPR19	FD	cis-1,2-Dichloroethene	20.0	26.0 D	26.0 J	-	ug/l	D3/H1

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260B, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS 680-568059/5 (BS)/ LCS 680-568059/5	Chloromethane	164.6	50 - 139	10 - 139	percent	J/None	C	
LCSD 680-567541/6 (BD)/ LCSD 680-567541/6	Bromochloromethane	76.20	78 - 123	10 - 123	percent	J/UJ	C	
LCSD 680-567541/6 (BD)/ LCSD 680-567541/6	Dibromomethane	77.40	79 - 123	10 - 123	percent	J/UJ	C	
LCSD 680-567541/6 (BD)/ LCSD 680-567541/6	1,3-Dichloropropane	79.00	80 - 119	10 - 119	percent	J/UJ	C	
LCSD 680-567541/6 (BD)/ LCSD 680-567541/6	1,1,2-Trichloroethane	79.60	80 - 119	10 - 119	percent	J/UJ	C	
LCSD 680-568059/6 (BD)/ LCSD 680-568059/6	Chloromethane	170.8	50 - 139	10 - 139	percent	J/None	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the LCS Recovery for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR_SPR19	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1/C
32M-01-13XBR_SPR19	N	1,3-Dichloropropane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-13XBR_SPR19	N	Bromochloromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-13XBR_SPR19	N	Dibromomethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-14XOB_SPR19	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1/C
32M-01-14XOB_SPR19	N	1,3-Dichloropropane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-14XOB_SPR19	N	Bromochloromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-14XOB_SPR19	N	Dibromomethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-TRIP BLANK	TB	1,1,2-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	1,3-Dichloropropane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	Bromochloromethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	Dibromomethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260B, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCSD 680-567541/6 (BD)/ LCSD 680-567541/6	Trichlorofluoromethane	20.07	< 20	< 20	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8260B, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
32M-01-17XBR_SPR19 (SD)/ 680-167491-7	Chloromethane	157.6	50 - 139	10 - 139	percent	J/None	M	
32M-01-17XBR_SPR19 (MS)/ 680-167491-7	Chloromethane	182.2	50 - 139	10 - 139	percent	J/None	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8260B, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
32M-01-13XBR_SPR19 (N)/ 680-167491-8	Toluene-d8	112.1	89 - 112	10 - 112	percent	J/None	I	
32M-TRIP BLANK (TB)/ 680-167491-2	Toluene-d8	69.62	89 - 112	10 - 112	percent	J/UJ	I	
32M-TRIP BLANK (TB)/ 680-167491-2	1,2-Dichloroethane-d4	74.38	81 - 118	10 - 118	percent	J/UJ	I	
32M-TRIP BLANK (TB)/ 680-167491-2	Dibromofluoromethane	80.98	89 - 119	10 - 119	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-TRIP BLANK	TB	1,1,1,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1,1-Trichloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1,2,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1,2-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	1,1-Dichloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2,3-Trichlorobenzene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2,3-Trichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2,4-Trichlorobenzene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2,4-Trimethylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dibromo-3-chloropropane	5.00	2.00 U	2.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dibromoethane (EDB)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichloroethane	1.00	1.00 U M	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichloroethene	2.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,3,5-Trimethylbenzene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,3-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,3-Dichloropropane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	1,4-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	2,2-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	2-Butanone (MEK)	10.0	10.0 U	10.0 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	2-Chlorotoluene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	2-Hexanone	10.0	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	4-Chlorotoluene	1.00	1.00 U	1.00 UJ		ug/l	H1/I

Qualified Results associated with the Surrogate for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-TRIP BLANK	TB	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Acetone	10.0	10.0 U	10.0 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Benzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromochloromethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	Bromodichloromethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromoform	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromomethane	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Carbon disulfide	2.00	2.00 U	2.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Carbon tetrachloride	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chloroethane	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chloroform	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chloromethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	cis-1,2-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	cis-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Dibromochloromethane	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Dibromomethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	Dichlorodifluoromethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Ethylbenzene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Hexachlorobutadiene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Isopropylbenzene (Cumene)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	m,p-Xylene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Methyl tert-butyl ether (MTBE)	10.0	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Methylene chloride	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Naphthalene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	n-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	n-Propylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	o-Xylene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	sec-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Styrene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	tert-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Tetrachloroethene (PCE)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Toluene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	trans-1,2-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	trans-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Trichloroethene (TCE)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Trichlorofluoromethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/I

Qualified Results associated with the Surrogate for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-TRIP BLANK	TB	Vinyl acetate	2.00	2.00 U	2.00 UJ		ug/l	V2/H1/I
32M-TRIP BLANK	TB	Vinyl chloride	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Xylenes, Total	2.00	0.500 U	0.500 UJ		ug/l	H1/I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260B, Test Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of analysis found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
32M-01-13XBR_SPR19 (N)/ 680-167491-8		14.67	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
32M-01-14XOB_SPR19 (N)/ 680-167491-11		14.66	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
32M-01-17XBR_SPR19 (N)/ 680-167491-7		14.42	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
32M-01-18XBR_SPR19 (N)/ 680-167491-9		17.92	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
32M-DUP01_SPR19 (FD)/ 680-167491-10		14.33	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
32M-TRIP BLANK (TB)/ 680-167491-2		14.98	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR_SPR19	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1/C
32M-01-13XBR_SPR19	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2-Dichloroethene	2.00	1.00 U H	1.00 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR_SPR19	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,3-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,3-Dichloropropane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-13XBR_SPR19	N	1,4-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Benzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Bromochloromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-13XBR_SPR19	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Bromomethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Chlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	cis-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Dibromomethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-13XBR_SPR19	N	Dichlorodifluoromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Ethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Isopropylbenzene (Cumene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	o-Xylene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR_SPR19	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Trichloroethene (TCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Trichlorofluoromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	V2/H1
32M-01-13XBR_SPR19	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Xylenes, Total	2.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1/C
32M-01-14XOB_SPR19	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dichloroethene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,3-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,3-Dichloropropane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-14XOB_SPR19	N	1,4-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Benzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Bromochloromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-14XOB_SPR19	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Bromomethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Chlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	cis-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Dibromomethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-14XOB_SPR19	N	Dichlorodifluoromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Ethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Isopropylbenzene (Cumene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	o-Xylene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Trichloroethene (TCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Trichlorofluoromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	V2/H1
32M-01-14XOB_SPR19	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Xylenes, Total	2.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1,1-Trichloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1,2-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-17XBR_SPR19	N	1,1-Dichloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2,3-Trichlorobenzene	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2,3-Trichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2,4-Trichlorobenzene	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2,4-Trimethylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U	2.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2-Dibromoethane (EDB)	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2-Dichloroethane	1.00	1.00 U M	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2-Dichloroethene	2.00	0.910 J	0.910 J	-	ug/l	H1/TR
32M-01-17XBR_SPR19	N	1,2-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,3,5-Trimethylbenzene	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,3-Dichlorobenzene	1.00	0.450 J	0.450 J	-	ug/l	H1/TR
32M-01-17XBR_SPR19	N	1,3-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,4-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	2,2-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	2-Butanone (MEK)	10.0	10.0 U	10.0 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	2-Chlorotoluene	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	2-Hexanone	10.0	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	4-Chlorotoluene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Acetone	10.0	10.0 U	10.0 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Benzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Bromobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Bromochloromethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Bromodichloromethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Bromoform	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Bromomethane	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Carbon disulfide	2.00	2.00 U	2.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Carbon tetrachloride	1.00	0.500 U	0.500 UJ		ug/l	V2/H1
32M-01-17XBR_SPR19	N	Chlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Chloroethane	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Chloroform	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Chloromethane	1.00	1.00 U J1 Q	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	cis-1,2-Dichloroethene	1.00	0.910 J	0.910 J	-	ug/l	H1/TR
32M-01-17XBR_SPR19	N	cis-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Dibromochloromethane	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Dibromomethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Dichlorodifluoromethane	1.00	1.00 U Q	1.00 UJ		ug/l	V2/H1
32M-01-17XBR_SPR19	N	Ethylbenzene	1.00	0.500 U	0.500 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-17XBR_SPR19	N	Hexachlorobutadiene	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Isopropylbenzene (Cumene)	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	m,p-Xylene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Methylene chloride	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Naphthalene	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	n-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	n-Propylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	o-Xylene	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	sec-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Styrene	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	tert-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Tetrachloroethene (PCE)	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Toluene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	trans-1,2-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	trans-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Trichloroethene (TCE)	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Trichlorofluoromethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Vinyl acetate	2.00	2.00 U	2.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Vinyl chloride	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Xylenes, Total	2.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1,1,2-Tetrachloroethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1,1-Trichloroethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1,2,2-Tetrachloroethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1,2-Trichloroethane	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1-Dichloroethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1-Dichloroethene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1-Dichloropropene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2,3-Trichlorobenzene	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2,3-Trichloropropane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2,4-Trichlorobenzene	10.0	10.0 U H M	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2,4-Trimethylbenzene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dibromo-3-chloropropane	10.0	4.00 U H	4.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dibromoethane (EDB)	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dichlorobenzene	2.00	250 H D	250 J	-	ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dichloroethane	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dichloroethene	4.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dichloropropane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,3,5-Trimethylbenzene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,3-Dichlorobenzene	2.00	41.0 H D	41.0 J	-	ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-18XBR_SPR19	N	1,3-Dichloropropane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,4-Dichlorobenzene	2.00	29.0 H D	29.0 J	-	ug/l	H1
32M-01-18XBR_SPR19	N	2,2-Dichloropropane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	2-Butanone (MEK)	20.0	20.0 U H	20.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	2-Chlorotoluene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	2-Hexanone	20.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	4-Chlorotoluene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	4-Methyl-2-pentanone (MIBK)	20.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Acetone	20.0	20.0 U H	20.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Benzene	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Bromobenzene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Bromochloromethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Bromodichloromethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Bromoform	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Bromomethane	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Carbon disulfide	4.00	4.00 U H	4.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Carbon tetrachloride	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Chlorobenzene	2.00	180 H D	180 J	-	ug/l	H1
32M-01-18XBR_SPR19	N	Chloroethane	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Chloroform	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Chloromethane	2.00	2.00 U Q H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	cis-1,2-Dichloroethene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	cis-1,3-Dichloropropene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Dibromochloromethane	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Dibromomethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Dichlorodifluoromethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Ethylbenzene	2.00	1.00 U H M	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Hexachlorobutadiene	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Isopropylbenzene (Cumene)	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	m,p-Xylene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Methyl tert-butyl ether (MTBE)	20.0	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Methylene chloride	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Naphthalene	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	n-Butylbenzene	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	n-Propylbenzene	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	o-Xylene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	p-Cymene (p-Isopropyltoluene)	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	sec-Butylbenzene	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Styrene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	tert-Butylbenzene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Tetrachloroethene (PCE)	2.00	2.00 U H	2.00 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-18XBR_SPR19	N	Toluene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	trans-1,2-Dichloroethene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	trans-1,3-Dichloropropene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Trichloroethene (TCE)	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Trichlorofluoromethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Vinyl acetate	4.00	4.00 U H	4.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Vinyl chloride	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Xylenes, Total	4.00	1.00 U H	1.00 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1,1,2-Tetrachloroethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1,1-Trichloroethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1,2,2-Tetrachloroethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1,2-Trichloroethane	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1-Dichloroethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1-Dichloroethene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1-Dichloropropene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2,3-Trichlorobenzene	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2,3-Trichloropropane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2,4-Trichlorobenzene	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2,4-Trimethylbenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2-Dibromo-3-chloropropane	100	40.0 U	40.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2-Dibromoethane (EDB)	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2-Dichlorobenzene	20.0	260 D	260 J	-	ug/l	H1
32M-DUP01_SPR19	FD	1,2-Dichloroethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2-Dichloroethene	40.0	26.0 J D	26.0 J	-	ug/l	D3/H1/TR
32M-DUP01_SPR19	FD	1,2-Dichloropropane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,3,5-Trimethylbenzene	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,3-Dichlorobenzene	20.0	42.0 D	42.0 J	-	ug/l	H1
32M-DUP01_SPR19	FD	1,3-Dichloropropane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,4-Dichlorobenzene	20.0	31.0 D	31.0 J	-	ug/l	H1
32M-DUP01_SPR19	FD	2,2-Dichloropropane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	2-Butanone (MEK)	200	200 U	200 UJ		ug/l	H1
32M-DUP01_SPR19	FD	2-Chlorotoluene	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	2-Hexanone	200	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	4-Chlorotoluene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	4-Methyl-2-pentanone (MIBK)	200	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Acetone	200	200 U	200 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Benzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Bromobenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Bromochloromethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Bromodichloromethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Bromoform	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Bromomethane	100	100 U	100 UJ		ug/l	H1

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-DUP01_SPR19	FD	Carbon disulfide	40.0	40.0 U	40.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Carbon tetrachloride	20.0	10.0 U	10.0 UJ		ug/l	V2/H1
32M-DUP01_SPR19	FD	Chlorobenzene	20.0	170 D	170 J	-	ug/l	H1
32M-DUP01_SPR19	FD	Chloroethane	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Chloroform	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Chloromethane	20.0	20.0 U M Q	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	cis-1,2-Dichloroethene	20.0	26.0 D	26.0 J	-	ug/l	D3/H1
32M-DUP01_SPR19	FD	cis-1,3-Dichloropropene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Dibromochloromethane	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Dibromomethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Dichlorodifluoromethane	20.0	20.0 U Q	20.0 UJ		ug/l	V2/H1
32M-DUP01_SPR19	FD	Ethylbenzene	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Hexachlorobutadiene	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Isopropylbenzene (Cumene)	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	m,p-Xylene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Methyl tert-butyl ether (MTBE)	200	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Methylene chloride	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Naphthalene	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	n-Butylbenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	n-Propylbenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	o-Xylene	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	p-Cymene (p-Isopropyltoluene)	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	sec-Butylbenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Styrene	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	tert-Butylbenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Tetrachloroethene (PCE)	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Toluene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	trans-1,2-Dichloroethene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	trans-1,3-Dichloropropene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Trichloroethene (TCE)	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Trichlorofluoromethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Vinyl acetate	40.0	40.0 U	40.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Vinyl chloride	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Xylenes, Total	40.0	10.0 U	10.0 UJ		ug/l	H1
32M-TRIP BLANK	TB	1,1,1,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1,1-Trichloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1,2,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1,2-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	1,1-Dichloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1/I

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-TRIP BLANK	TB	1,2,3-Trichlorobenzene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2,3-Trichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2,4-Trichlorobenzene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2,4-Trimethylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dibromo-3-chloropropane	5.00	2.00 U	2.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dibromoethane (EDB)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichloroethane	1.00	1.00 U M	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichloroethene	2.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,3,5-Trimethylbenzene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,3-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,3-Dichloropropane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	1,4-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	2,2-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	2-Butanone (MEK)	10.0	10.0 U	10.0 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	2-Chlorotoluene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	2-Hexanone	10.0	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	4-Chlorotoluene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Acetone	10.0	10.0 U	10.0 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Benzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromochloromethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	Bromodichloromethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromoform	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromomethane	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Carbon disulfide	2.00	2.00 U	2.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Carbon tetrachloride	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chloroethane	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chloroform	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chloromethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	cis-1,2-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	cis-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Dibromochloromethane	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Dibromomethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	Dichlorodifluoromethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Ethylbenzene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Hexachlorobutadiene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Isopropylbenzene (Cumene)	1.00	1.00 U	1.00 UJ		ug/l	H1/I

Qualified Results associated with the Test Hold Time for SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-TRIP BLANK	TB	m,p-Xylene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Methyl tert-butyl ether (MTBE)	10.0	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Methylene chloride	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Naphthalene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	n-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	n-Propylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	o-Xylene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	sec-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Styrene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	tert-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Tetrachloroethene (PCE)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Toluene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	trans-1,2-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	trans-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Trichloroethene (TCE)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Trichlorofluoromethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Vinyl acetate	2.00	2.00 U	2.00 UJ		ug/l	V2/H1/I
32M-TRIP BLANK	TB	Vinyl chloride	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Xylenes, Total	2.00	0.500 U	0.500 UJ		ug/l	H1/I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: SW6010C	Extraction Method: , Total							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-18XBR_SPR19	N	Manganese	10.0	2200	2200 J		ug/l	D3
32M-DUP01_SPR19	FD	Manganese	10.0	3100	3100 J		ug/l	D3

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR_SPR19	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1/C
32M-01-13XBR_SPR19	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2-Dichloroethene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,3-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	1,3-Dichloropropane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-13XBR_SPR19	N	1,4-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Benzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Bromochloromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-13XBR_SPR19	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Bromomethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-13XBR_SPR19	N	Chlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	cis-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Dibromomethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-13XBR_SPR19	N	Dichlorodifluoromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Ethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Isopropylbenzene (Cumene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	o-Xylene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Trichloroethene (TCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Trichlorofluoromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	V2/H1
32M-01-13XBR_SPR19	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-13XBR_SPR19	N	Xylenes, Total	2.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1,1-Trichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1,2-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1/C
32M-01-14XOB_SPR19	N	1,1-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,1-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2,3-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-14XOB_SPR19	N	1,2,4-Trichlorobenzene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dibromoethane (EDB)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dichloroethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dichloroethene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,3-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	1,3-Dichloropropane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-14XOB_SPR19	N	1,4-Dichlorobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	2-Hexanone	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Acetone	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Benzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Bromobenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Bromochloromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-14XOB_SPR19	N	Bromodichloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Bromoform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Bromomethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Carbon disulfide	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Carbon tetrachloride	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Chlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Chloroethane	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Chloroform	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Chloromethane	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	cis-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	cis-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Dibromochloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Dibromomethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1/C
32M-01-14XOB_SPR19	N	Dichlorodifluoromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Ethylbenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Hexachlorobutadiene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Isopropylbenzene (Cumene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	m,p-Xylene	1.00	1.00 U H	1.00 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-14XOB_SPR19	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Methylene chloride	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Naphthalene	5.00	5.00 U H	5.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	n-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	o-Xylene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Styrene	1.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	tert-Butylbenzene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Tetrachloroethene (PCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Toluene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	trans-1,2-Dichloroethene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	trans-1,3-Dichloropropene	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Trichloroethene (TCE)	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Trichlorofluoromethane	1.00	1.00 U H Q	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Vinyl acetate	2.00	2.00 U H	2.00 UJ		ug/l	V2/H1
32M-01-14XOB_SPR19	N	Vinyl chloride	1.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-14XOB_SPR19	N	Xylenes, Total	2.00	0.500 U H	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1,1,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1,1-Trichloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1,2-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1-Dichloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,1-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2,3-Trichlorobenzene	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2,3-Trichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2,4-Trichlorobenzene	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2,4-Trimethylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2-Dibromo-3-chloropropane	5.00	2.00 U	2.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2-Dibromoethane (EDB)	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2-Dichloroethane	1.00	1.00 U M	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,2-Dichloroethene	2.00	0.910 J	0.910 J	-	ug/l	H1/TR
32M-01-17XBR_SPR19	N	1,2-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,3,5-Trimethylbenzene	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,3-Dichlorobenzene	1.00	0.450 J	0.450 J	-	ug/l	H1/TR
32M-01-17XBR_SPR19	N	1,3-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	1,4-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	2,2-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-17XBR_SPR19	N	2-Butanone (MEK)	10.0	10.0 U	10.0 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	2-Chlorotoluene	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	2-Hexanone	10.0	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	4-Chlorotoluene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Acetone	10.0	10.0 U	10.0 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Benzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Bromobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Bromochloromethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Bromodichloromethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Bromoform	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Bromomethane	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Carbon disulfide	2.00	2.00 U	2.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Carbon tetrachloride	1.00	0.500 U	0.500 UJ		ug/l	V2/H1
32M-01-17XBR_SPR19	N	Chlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Chloroethane	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Chloroform	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Chloromethane	1.00	1.00 U J1 Q	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	cis-1,2-Dichloroethene	1.00	0.910 J	0.910 J	-	ug/l	H1/TR
32M-01-17XBR_SPR19	N	cis-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Dibromochloromethane	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Dibromomethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Ethylbenzene	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Hexachlorobutadiene	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Isopropylbenzene (Cumene)	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	m,p-Xylene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Methyl tert-butyl ether (MTBE)	10.0	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Methylene chloride	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Naphthalene	5.00	5.00 U	5.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	n-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	n-Propylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	o-Xylene	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	sec-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Styrene	1.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	tert-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Tetrachloroethene (PCE)	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Toluene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	trans-1,2-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	trans-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-17XBR_SPR19	N	Trichloroethene (TCE)	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Trichlorofluoromethane	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Vinyl acetate	2.00	2.00 U	2.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Vinyl chloride	1.00	1.00 U	1.00 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Xylenes, Total	2.00	0.500 U	0.500 UJ		ug/l	H1
32M-01-17XBR_SPR19	N	Dichlorodifluoromethane	1.00	1.00 U Q	1.00 UJ		ug/l	V2/H1
32M-01-18XBR_SPR19	N	1,1,1,2-Tetrachloroethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1,1-Trichloroethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1,2,2-Tetrachloroethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1,2-Trichloroethane	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1-Dichloroethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1-Dichloroethene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,1-Dichloropropene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2,3-Trichlorobenzene	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2,3-Trichloropropane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2,4-Trichlorobenzene	10.0	10.0 U H M	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2,4-Trimethylbenzene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dibromo-3-chloropropane	10.0	4.00 U H	4.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dibromoethane (EDB)	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dichlorobenzene	2.00	250 H D	250 J	-	ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dichloroethane	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dichloroethene	4.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,2-Dichloropropane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,3,5-Trimethylbenzene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,3-Dichlorobenzene	2.00	41.0 H D	41.0 J	-	ug/l	H1
32M-01-18XBR_SPR19	N	1,3-Dichloropropane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	1,4-Dichlorobenzene	2.00	29.0 H D	29.0 J	-	ug/l	H1
32M-01-18XBR_SPR19	N	2,2-Dichloropropane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	2-Butanone (MEK)	20.0	20.0 U H	20.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	2-Chlorotoluene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	2-Hexanone	20.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	4-Chlorotoluene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	4-Methyl-2-pentanone (MIBK)	20.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Acetone	20.0	20.0 U H	20.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Benzene	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Bromobenzene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Bromochloromethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Bromodichloromethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Bromoform	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Bromomethane	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Carbon disulfide	4.00	4.00 U H	4.00 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-18XBR_SPR19	N	Carbon tetrachloride	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Chlorobenzene	2.00	180 H D	180 J	-	ug/l	H1
32M-01-18XBR_SPR19	N	Chloroethane	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Chloroform	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Chloromethane	2.00	2.00 U Q H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	cis-1,2-Dichloroethene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	cis-1,3-Dichloropropene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Dibromochloromethane	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Dibromomethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Dichlorodifluoromethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Ethylbenzene	2.00	1.00 U H M	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Hexachlorobutadiene	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Isopropylbenzene (Cumene)	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	m,p-Xylene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Methyl tert-butyl ether (MTBE)	20.0	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Methylene chloride	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Naphthalene	10.0	10.0 U H	10.0 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	n-Butylbenzene	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	n-Propylbenzene	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	o-Xylene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	p-Cymene (p-Isopropyltoluene)	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	sec-Butylbenzene	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Styrene	2.00	1.00 U H	1.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	tert-Butylbenzene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Tetrachloroethene (PCE)	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Toluene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	trans-1,2-Dichloroethene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	trans-1,3-Dichloropropene	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Trichloroethene (TCE)	2.00	2.00 U H M	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Trichlorofluoromethane	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Vinyl acetate	4.00	4.00 U H	4.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Vinyl chloride	2.00	2.00 U H	2.00 UJ		ug/l	H1
32M-01-18XBR_SPR19	N	Xylenes, Total	4.00	1.00 U H	1.00 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1,1,2-Tetrachloroethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1,1-Trichloroethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1,2,2-Tetrachloroethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1,2-Trichloroethane	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1-Dichloroethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1-Dichloroethene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,1-Dichloropropene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2,3-Trichlorobenzene	100	100 U	100 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B Extraction Method: SW5030B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-DUP01_SPR19	FD	1,2,3-Trichloropropane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2,4-Trichlorobenzene	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2,4-Trimethylbenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2-Dibromo-3-chloropropane	100	40.0 U	40.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2-Dibromoethane (EDB)	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2-Dichlorobenzene	20.0	260 D	260 J	-	ug/l	H1
32M-DUP01_SPR19	FD	1,2-Dichloroethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,2-Dichloroethene	40.0	26.0 J D	26.0 J	-	ug/l	D3/H1/TR
32M-DUP01_SPR19	FD	1,2-Dichloropropane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,3,5-Trimethylbenzene	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,3-Dichlorobenzene	20.0	42.0 D	42.0 J	-	ug/l	H1
32M-DUP01_SPR19	FD	1,3-Dichloropropane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	1,4-Dichlorobenzene	20.0	31.0 D	31.0 J	-	ug/l	H1
32M-DUP01_SPR19	FD	2,2-Dichloropropane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	2-Butanone (MEK)	200	200 U	200 UJ		ug/l	H1
32M-DUP01_SPR19	FD	2-Chlorotoluene	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	2-Hexanone	200	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	4-Chlorotoluene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	4-Methyl-2-pentanone (MIBK)	200	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Acetone	200	200 U	200 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Benzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Bromobenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Bromochloromethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Bromodichloromethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Bromoform	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Bromomethane	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Carbon disulfide	40.0	40.0 U	40.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Carbon tetrachloride	20.0	10.0 U	10.0 UJ		ug/l	V2/H1
32M-DUP01_SPR19	FD	Chlorobenzene	20.0	170 D	170 J	-	ug/l	H1
32M-DUP01_SPR19	FD	Chloroethane	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Chloroform	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Chloromethane	20.0	20.0 U M Q	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	cis-1,2-Dichloroethene	20.0	26.0 D	26.0 J	-	ug/l	D3/H1
32M-DUP01_SPR19	FD	cis-1,3-Dichloropropene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Dibromochloromethane	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Dibromomethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Ethylbenzene	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Hexachlorobutadiene	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Isopropylbenzene (Cumene)	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	m,p-Xylene	20.0	20.0 U	20.0 UJ		ug/l	H1

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-DUP01_SPR19	FD	Methyl tert-butyl ether (MTBE)	200	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Methylene chloride	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Naphthalene	100	100 U	100 UJ		ug/l	H1
32M-DUP01_SPR19	FD	n-Butylbenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	n-Propylbenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	o-Xylene	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	p-Cymene (p-Isopropyltoluene)	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	sec-Butylbenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Styrene	20.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	tert-Butylbenzene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Tetrachloroethene (PCE)	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Toluene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	trans-1,2-Dichloroethene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	trans-1,3-Dichloropropene	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Trichloroethene (TCE)	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Trichlorofluoromethane	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Vinyl acetate	40.0	40.0 U	40.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Vinyl chloride	20.0	20.0 U	20.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Xylenes, Total	40.0	10.0 U	10.0 UJ		ug/l	H1
32M-DUP01_SPR19	FD	Dichlorodifluoromethane	20.0	20.0 U Q	20.0 UJ		ug/l	V2/H1
32M-TRIP BLANK	TB	1,1,1,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1,1-Trichloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1,2,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1,2-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	1,1-Dichloroethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,1-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2,3-Trichlorobenzene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2,3-Trichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2,4-Trichlorobenzene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2,4-Trimethylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dibromo-3-chloropropane	5.00	2.00 U	2.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dibromoethane (EDB)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichloroethane	1.00	1.00 U M	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichloroethene	2.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,2-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,3,5-Trimethylbenzene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,3-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	1,3-Dichloropropane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	1,4-Dichlorobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I

Table of All Qualified Results

Test Method: SW8260B	Extraction Method: SW5030B							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-TRIP BLANK	TB	2,2-Dichloropropane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	2-Butanone (MEK)	10.0	10.0 U	10.0 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	2-Chlorotoluene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	2-Hexanone	10.0	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	4-Chlorotoluene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	4-Methyl-2-pentanone (MIBK)	10.0	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Acetone	10.0	10.0 U	10.0 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Benzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromobenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromochloromethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	Bromodichloromethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromoform	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Bromomethane	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Carbon disulfide	2.00	2.00 U	2.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Carbon tetrachloride	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chloroethane	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chloroform	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Chloromethane	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	cis-1,2-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	cis-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Dibromochloromethane	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Dibromomethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/C/I
32M-TRIP BLANK	TB	Dichlorodifluoromethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Ethylbenzene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Hexachlorobutadiene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Isopropylbenzene (Cumene)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	m,p-Xylene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Methyl tert-butyl ether (MTBE)	10.0	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Methylene chloride	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Naphthalene	5.00	5.00 U	5.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	n-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	n-Propylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	o-Xylene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	p-Cymene (p-Isopropyltoluene)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	sec-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Styrene	1.00	0.500 U	0.500 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	tert-Butylbenzene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Tetrachloroethene (PCE)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Toluene	1.00	1.00 U	1.00 UJ		ug/l	H1/I

Table of All Qualified Results

Test Method: SW8260B Extraction Method: SW5030B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-TRIP BLANK	TB	trans-1,2-Dichloroethene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	trans-1,3-Dichloropropene	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Trichloroethene (TCE)	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Trichlorofluoromethane	1.00	1.00 U Q	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Vinyl acetate	2.00	2.00 U	2.00 UJ		ug/l	V2/H1/I
32M-TRIP BLANK	TB	Vinyl chloride	1.00	1.00 U	1.00 UJ		ug/l	H1/I
32M-TRIP BLANK	TB	Xylenes, Total	2.00	0.500 U	0.500 UJ		ug/l	H1/I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
32M-01-13XBR_SPR19	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-13XBR_SPR19	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-13XBR_SPR19	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-13XBR_SPR19	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ	0.500 UJ	H1
32M-01-13XBR_SPR19	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-13XBR_SPR19	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ	10.0 UJ	H1
32M-01-13XBR_SPR19	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ	0.500 UJ	H1
32M-01-13XBR_SPR19	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-13XBR_SPR19	N	Bromobenzene	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-13XBR_SPR19	N	Chloromethane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-13XBR_SPR19	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-13XBR_SPR19	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-14XOB_SPR19	N	1,1,2,2-Tetrachloroethane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-14XOB_SPR19	N	1,2,3-Trichloropropane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-14XOB_SPR19	N	1,2,4-Trimethylbenzene	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-14XOB_SPR19	N	1,3,5-Trimethylbenzene	1.00	0.500 U H	0.500 UJ	0.500 UJ	H1
32M-01-14XOB_SPR19	N	2,2-Dichloropropane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-14XOB_SPR19	N	2-Butanone (MEK)	10.0	10.0 U H	10.0 UJ	10.0 UJ	H1
32M-01-14XOB_SPR19	N	2-Chlorotoluene	1.00	0.500 U H	0.500 UJ	0.500 UJ	H1
32M-01-14XOB_SPR19	N	4-Chlorotoluene	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-14XOB_SPR19	N	Bromobenzene	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-14XOB_SPR19	N	Chloromethane	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-14XOB_SPR19	N	n-Propylbenzene	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-14XOB_SPR19	N	sec-Butylbenzene	1.00	1.00 U H	1.00 UJ	1.00 UJ	H1
32M-01-17XBR_SPR19	N	2,2-Dichloropropane	1.00	1.00 U	1.00 UJ	1.00 UJ	H1
32M-01-17XBR_SPR19	N	Bromomethane	5.00	5.00 U	5.00 UJ	5.00 UJ	H1
32M-01-18XBR_SPR19	N	2,2-Dichloropropane	2.00	2.00 U H	2.00 UJ	2.00 UJ	H1
32M-01-18XBR_SPR19	N	Dichlorodifluoromethane	2.00	2.00 U H	2.00 UJ	2.00 UJ	H1
32M-01-18XBR_SPR19	N	Vinyl acetate	4.00	4.00 U H	4.00 UJ	4.00 UJ	H1
32M-DUP01_SPR19	FD	2,2-Dichloropropane	20.0	20.0 U	20.0 UJ	20.0 UJ	H1
32M-DUP01_SPR19	FD	Bromomethane	100	100 U	100 UJ	100 UJ	H1
32M-TRIP BLANK	TB	1,1,2,2-Tetrachloroethane	1.00	1.00 U	1.00 UJ	1.00 UJ	H1/I
32M-TRIP BLANK	TB	1,2,3-Trichloropropane	1.00	1.00 U	1.00 UJ	1.00 UJ	H1/I
32M-TRIP BLANK	TB	1,2,4-Trimethylbenzene	1.00	1.00 U	1.00 UJ	1.00 UJ	H1/I
32M-TRIP BLANK	TB	1,3,5-Trimethylbenzene	1.00	0.500 U	0.500 UJ	0.500 UJ	H1/I
32M-TRIP BLANK	TB	2,2-Dichloropropane	1.00	1.00 U	1.00 UJ	1.00 UJ	H1/I
32M-TRIP BLANK	TB	2-Butanone (MEK)	10.0	10.0 U	10.0 UJ	10.0 UJ	H1/I
32M-TRIP BLANK	TB	2-Chlorotoluene	1.00	0.500 U	0.500 UJ	0.500 UJ	H1/I
32M-TRIP BLANK	TB	4-Chlorotoluene	1.00	1.00 U	1.00 UJ	1.00 UJ	H1/I
32M-TRIP BLANK	TB	Bromobenzene	1.00	1.00 U	1.00 UJ	1.00 UJ	H1/I
32M-TRIP BLANK	TB	Chloromethane	1.00	1.00 U	1.00 UJ	1.00 UJ	H1/I
32M-TRIP BLANK	TB	n-Propylbenzene	1.00	1.00 U	1.00 UJ	1.00 UJ	H1/I

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
32M-TRIP BLANK	TB	sec-Butylbenzene	1.00	1.00 U	1.00 UJ	1.00 UJ	H1/I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
C	LCS Recovery
D3	Field Duplicate RPD
H1	Test Hold Time
I	Surrogate recovery outside project limits.
L	Lab Blank
M	MS Recovery
TR	Trace Level Detect
V2	CCV
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -7 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?		•		Samples -9/-10 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -7 was spiked and analyzed as MS/MSD
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -9/-10 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW8260B (Volatile Organic Compounds by Capillary GC/MS)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?		•		See outlier report and method comment.
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			See outlier report.
Were surrogate recoveries within project acceptance limits?		•		See outlier report.
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?	•			Sample --2 was a trip blank.
Were target analytes reported in the field blank(s) less than MDL?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?		•		See outlier report.
Was the LCS/LCSD RPD within project acceptance limits?		•		See outlier report.
Was a MS/MSD pair prepared with each batch?	•			Sample -7 was spiked and analyzed as MS/MSD>
Were MS/MSD recoveries within project acceptance limits?		•		See outlier report
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?		•		Samples -9/-10 were FD samples. Samples were analyzed at dilutions. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			Samples -9 and -10 were analyzed at dilution due to high levels of target VOC. RsL were elevated accordingly.
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Field Duplicates for SDG: 6801674912

Location	Analysis
32M-01-18XBR	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Manganese (TOTAL)	2200	3100	10.0	34.0	30	Out	NA

Location	Analysis
32M-01-18XBR	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Arsenic (TOTAL)	3.40	3.60	3.00	5.71	30	NA	OK

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,1,1,2-Tetrachloroethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,1,1-Trichloroethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,1,2,2-Tetrachloroethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,1,2-Trichloroethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,1-Dichloroethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,1-Dichloroethene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,1-Dichloropropene	ND	ND	2.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Field Duplicates for SDG: 6801674912

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,2,3-Trichlorobenzene	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,2,3-Trichloropropane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,2,4-Trichlorobenzene	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,2,4-Trimethylbenzene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,2-Dibromo-3-chloropropane	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,2-Dibromoethane (EDB)	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,2-Dichlorobenzene	250	260	2.00	3.92	30	OK	NA
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,2-Dichloroethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,2-Dichloroethene	ND	26.0	4.00	NA	30	NA	26.0
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,2-Dichloropropane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,3,5-Trimethylbenzene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,3-Dichlorobenzene	41.0	42.0	2.00	2.41	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,3-Dichloropropane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	1,4-Dichlorobenzene	29.0	31.0	2.00	6.67	30	NA	OK

FD = Field Duplicate
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RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Field Duplicates for SDG: 6801674912

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	2,2-Dichloropropane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	2-Butanone (MEK)	ND	ND	20.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	2-Chlorotoluene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	2-Hexanone	ND	ND	20.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	4-Chlorotoluene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	4-Methyl-2-pentanone (MIBK)	ND	ND	20.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Acetone	ND	ND	20.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Benzene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Bromobenzene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Bromochloromethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Bromodichloromethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Bromoform	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Bromomethane	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Carbon disulfide	ND	ND	4.00	NA	30	NA	OK

FD = Field Duplicate
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RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Field Duplicates for SDG: 6801674912

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Carbon tetrachloride	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Chlorobenzene	180	170	2.00	5.71	30	OK	NA
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Chloroethane	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Chloroform	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Chloromethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	cis-1,2-Dichloroethene	ND	26.0	2.00	NA	30	NA	26.0
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	cis-1,3-Dichloropropene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Dibromochloromethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Dibromomethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Dichlorodifluoromethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Ethylbenzene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Hexachlorobutadiene	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Isopropylbenzene (Cumene)	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	m,p-Xylene	ND	ND	2.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Field Duplicates for SDG: 6801674912

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Methyl tert-butyl ether (MTBE)	ND	ND	20.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Methylene chloride	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	n-Butylbenzene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	n-Propylbenzene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Naphthalene	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	o-Xylene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	p-Cymene (p-Isopropyltoluene)	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	sec-Butylbenzene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Styrene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	tert-Butylbenzene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Tetrachloroethene (PCE)	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Toluene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	trans-1,2-Dichloroethene	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	trans-1,3-Dichloropropene	ND	ND	2.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Field Duplicates for SDG: 6801674912

Location	Analysis
32M-01-18XBR	SW8260B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Trichloroethene (TCE)	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Trichlorofluoromethane	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Vinyl acetate	ND	ND	4.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Vinyl chloride	ND	ND	2.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	680-167491-9 / 680-167491-10	Xylenes, Total	ND	ND	4.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
SDG:	SM3546
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Solutions, LLC, Marlborough, MA
Project Manager:	Jim Ropp
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	Koman Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	May 29, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPVP
32M-01-13XBR_SPR19	SM3546-1	Water	Field Sample/N	X
32M-01-14XOB_SPR19	SM3546-2	Water	Field Sample/N	X
32M-01-17XBR_SPR19	SM3546-3	Water	Field Sample/N	X
32M-01-18XBR_SPR19	SM3546-4	Water	Field Sample/N	X
32M-DUP01_SPR19	SM3546-5	Water	Field Duplicate/FD	X
32M-TRIP BLANK	SM3546-6	Water	Trip Blank/TB	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Solutions, LLC, Marlborough, MA; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) SM3546. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- LCS RPD
- Field Duplicate RPD
- Blank
- LCS Recovery
- Prep Hold Time
- Blank - Negative
- MS RPD
- Surrogate
- MS Recovery
- Test Hold Time
- Trip Blank

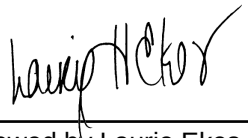
Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 20 results (33.33%) out of the 60 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Sample for VPH analyses from AOC32/43A were subcontracted by Test America to Katahdin Analytical. The VPH EDD results were reported separately under SDG SM3546. The VPH data is included in Test America's data package 680-167491-2.

Analytical Method	Data Reviewer Comment
MADEPVP	No additional comments; see Checklist for detail.



May 29, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, Koman Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.



May 29, 2019

Reviewed by Sherri Pullar, Senior Scientist, Koman Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPVP, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
32M-01-17XBR_SPR19 (N)/ SM3546-3	2,5-Dibromotoluene	68.90	70 - 130	10 - 130	percent	J/UJ	I	
32M-01-18XBR_SPR19 (N)/ SM3546-4	2,5-Dibromotoluene	67.70	70 - 130	10 - 130	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-17XBR_SPR19	N	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR_SPR19	N	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR_SPR19	N	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	100	75.0 U	75.0 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-18XBR_SPR19	N	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-18XBR_SPR19	N	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I

Qualified Results associated with the Surrogate for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-18XBR_SPR19	N	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	100	160	160 J	-	ug/l	I
32M-01-18XBR_SPR19	N	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	110	110 J	-	ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: MADEPVP	Extraction Method: SW5030C							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
32M-01-17XBR_SPR19	N	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR_SPR19	N	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR_SPR19	N	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	100	75.0 U	75.0 UJ		ug/l	I
32M-01-17XBR_SPR19	N	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-18XBR_SPR19	N	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-18XBR_SPR19	N	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
32M-01-18XBR_SPR19	N	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	100	160	160 J	-	ug/l	I
32M-01-18XBR_SPR19	N	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	110	110 J	-	ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions	
Code	Definition
I	Surrogate recovery outside project limits.
TR	Trace Level Detect

Flag Code and Definitions	
Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?		•		See outlier report.
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?	•			Sample SM3546-6 was a TB sample.
Were target analytes reported in the field blank(s) less than MDL?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Sample SM3546-3 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?		•		Samples SM3546-4/-5 were FD samples. RPDs were >30%, however the difference between results was less than the RL. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?			•	
Were any data rejected during the verification process?			•	

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 32/43A Spring 2019
Field Duplicates for SDG: SM3546

Location	Analysis
32M-01-18XBR	MADEPVP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	SM3546-4 / SM3546-5	Benzene	ND	ND	3.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	SM3546-4 / SM3546-5	Ethylbenzene	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	SM3546-4 / SM3546-5	m,p-Xylene	ND	ND	10.0	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	SM3546-4 / SM3546-5	Methyl tert-butyl ether (MTBE)	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	SM3546-4 / SM3546-5	Naphthalene	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	SM3546-4 / SM3546-5	o-Xylene	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	SM3546-4 / SM3546-5	Toluene	ND	ND	5.00	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	SM3546-4 / SM3546-5	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	SM3546-4 / SM3546-5	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	160	230	100	35.9	30	NA	OK
32M-01-18XBR_SPR19 / 32M-DUP01_SPR19	SM3546-4 / SM3546-5	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	110	190	100	53.3	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Data Validation Report for 6801672301

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, AOC 57 Spring 2019
SDG:	6801672301
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Solutions, LLC, Marlborough, MA
Project Manager:	Jim Ropp
Contract Laboratory(ies):	TestAmerica Laboratories, Inc., Savannah, GA
Data Review Contractor:	Koman Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	May 22, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW6010C - Dissolved	SW6020A - Dissolved
57-SW1_SPR19	680-167230-1	Water	Field Sample/N	X	X
57-SWDUP_SPR19	680-167230-2	Water	Field Duplicate/FD	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Solutions, LLC, Marlborough, MA; analyses were performed by TestAmerica Laboratories, Inc., Savannah, GA and were reported under sample delivery group (SDG) 6801672301. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank
- Interference Check Sample A - Negative
- Blank - Negative
- Interference Check Sample A
- Calibration Blank
- Calibration Blank - Negative
- Prep Hold Time
- Field Duplicate RPD
- Interference Check Sample AB
- Continuing Calibration Verification
- LCS Recovery
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 0 results (0.00%) out of the 6 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains one SW sample and an FD sample collected from AOC 57 and submitted for dissolved metals (As, Fe and Mn).

Analytical Method	Data Reviewer Comment
SW6010C	No additional comments; see Checklist for detail.
SW6020A	No additional comments; see Checklist for detail.

May 08, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, Koman Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

May 22, 2019

Reviewed by Sherri Pullar, Senior Scientist, Koman Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW6010C, Dissolved, Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
MB 680-566278/1-A (LB)/ MB 680-566278/1-A	Iron	18.60	< 17	< 50	ug/l	U/None	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Qualified Results

No results associated with this sample delivery group required qualification.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
L	Lab Blank
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		See outlier report. Fe was reported n the MB sample at 18.6 ug/L. Sample results for Fe were greater than 5 times the MB; no qualification were needed.
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			See FD report. Arsenic was ND in both samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 57 Spring 2019
Field Duplicates for SDG: 6801672301

Location	Analysis
57-SW1	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
57-SW1_SPR19 / 57-SWDUP_SPR19	680-167230-1 / 680-167230-2	Iron (FLDFLT)	760	600	50.0	23.5	30	OK	NA
57-SW1_SPR19 / 57-SWDUP_SPR19	680-167230-1 / 680-167230-2	Manganese (FLDFLT)	110	100	10.0	9.52	30	OK	NA

Location	Analysis
57-SW1	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
57-SW1_SPR19 / 57-SWDUP_SPR19	680-167230-1 / 680-167230-2	Arsenic (FLDFLT)	ND	ND	3.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Data Validation Report for 6801674913

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, AOC 57 Spring 2019
SDG:	6801674913
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Solutions, LLC, Marlborough, MA
Project Manager:	Jim Ropp
Contract Laboratory(ies):	TestAmerica Laboratories, Inc., Savannah, GA
Data Review Contractor:	Koman Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	May 22, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW6010C	SW6020A
57M-95-03X_SPR19	680-167491-12	Water	Field Sample/N	X	X
57M-96-11X_SPR19	680-167491-13	Water	Field Sample/N	X	X
57M-DUP01_SPR19	680-167491-14	Water	Field Duplicate/FD	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Solutions, LLC, Marlborough, MA; analyses were performed by TestAmerica Laboratories, Inc., Savannah, GA and were reported under sample delivery group (SDG) 6801674913. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Interference Check Sample A - Negative
- Field Duplicate RPD
- Blank - Negative
- Blank
- Calibration Blank
- MS Recovery
- Calibration Blank - Negative
- MS RPD
- Interference Check Sample A
- Test Hold Time
- Prep Hold Time
- Interference Check Sample AB
- Continuing Calibration Verification
- LCS Recovery

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 0 results (0.00%) out of the 9 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains 2 GW samples and 1 FD sample collected from AOC 57 and submitted for total metals (As, Fe and Mn).

Analytical Method	Data Reviewer Comment
SW6010C	No additional comments; see Checklist for detail.
SW6020A	No additional comments; see Checklist for detail.

May 08, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, Koman Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

May 22, 2019

Reviewed by Sherri Pullar, Senior Scientist, Koman Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

No Outliers were associated with this sample delivery group.

Qualified Results

No results associated with this sample delivery group required qualification.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -1 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -13/-14 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -1 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -13/-14 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 57 Spring 2019
Field Duplicates for SDG: 6801674913

Location	Analysis
57M-96-11X	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
57M-96-11X_SPR19 / 57M-DUP01_SPR19	680-167491-13 / 680-167491-14	Iron (TOTAL)	36000	38000	50.0	5.41	30	OK	NA
57M-96-11X_SPR19 / 57M-DUP01_SPR19	680-167491-13 / 680-167491-14	Manganese (TOTAL)	3000	3100	10.0	3.28	30	OK	NA

Location	Analysis
57M-96-11X	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
57M-96-11X_SPR19 / 57M-DUP01_SPR19	680-167491-13 / 680-167491-14	Arsenic (TOTAL)	100	110	3.00	9.52	30	OK	NA

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, DCL Spring 2019
SDG:	6801674911
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Solutions, LLC, Marlborough, MA
Project Manager:	Jim Ropp
Contract Laboratory(ies):	TestAmerica Laboratories, Inc., Arvada, CO
Data Review Contractor:	KOMAN Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	June 06, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	A2320B	A2540C	E353.2	E410.4	SW6010C	SW6020A	SW7470A	SW8081B	SW9012B	SW9056A
LFM-03-07_SPR19	680-167491-1	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X
LFM-99-02B_SPR19	680-167491-3	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X
LFM-99-05A_SPR19	680-167491-4	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X
LFM-99-06ARP_SPR19	680-167491-6	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X
LFM-DUP01_SPR19	680-167491-5	Water	Field Duplicate/FD	X	X	X	X	X	X	X	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Solutions, LLC, Marlborough, MA; analyses were performed by TestAmerica Laboratories, Inc., Arvada, CO and were reported under sample delivery group (SDG) 6801674911. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Interference Check Sample A
- MS RPD
- Blank
- Surrogate
- Field Duplicate RPD
- MS Recovery
- LCS RPD
- Test Hold Time
- Interference Check Sample A - Negative
- Lab Replicate RPD
- Prep Hold Time
- Interference Check Sample AB
- Calibration Blank
- Continuing Calibration Verification
- LCS Recovery
- Calibration Blank - Negative

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 35 results (18.42%) out of the 190 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains the Spring 2019 LTM samples from DCL.

Analytical Method	Data Reviewer Comment
A2320B	No additional comments; see Checklist for detail.
A2540C	No additional comments; see Checklist for detail.
E353.2	No additional comments; see Checklist for detail.
E410.4	No additional comments; see Checklist for detail.
SW6010C	Samples were analyzed and reported for Ag, Ba, Cd, Cr, Cu, Fe, Mn, Pb and Se by method SW6010C.
SW6020A	Samples were analyzed and reported for arsenic by method SW6020A.
SW7470A	No additional comments; see Checklist for detail.
SW8081B	No additional comments; see Checklist for detail.
SW9012B	No additional comments; see Checklist for detail.
SW9056A	No additional comments; see Checklist for detail.

June 06, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, KOMAN Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

June 06, 2019

Reviewed by Sherri Pullar, Senior Scientist, KOMAN Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method E410.4, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-02B_SPR19 (SD)/ 680-167491-3	Chemical Oxygen Demand	110.2	90 - 110	10 - 110	percent	J/None	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW6010C, Total, Calibration Blank

The purpose of calibration blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in calibration blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCB 680-572973/128 (CB)/ CCB 680-572973/128	Lead	4.170	< 3.9	< 10	ug/l	U/None	B2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW6010C, Total, Field Duplicate RPD

Field duplicate analyses are performed in order to assess sample collection/laboratory precision for each sample matrix. Summary forms were evaluated and compared to electronic data deliverables. Field duplicate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-05A_SPR19 (N)/ 680-167491-5	Iron	360.0	< 50	< 50	ug/l	J/None	D3	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Field Duplicate RPD for SW6010C, Total

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-05A_SPR19	N	Iron	50.0	130	130 J		ug/l	D3
LFM-DUP01_SPR19	FD	Iron	50.0	490	490 J		ug/l	D3

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8081B, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS 680-566463/19-A (BS)/ LCS 680-566463/19-A	Aldrin	30.40	45 - 134	10 - 134	percent	J/UJ	C	
LCS 680-566463/19-A (BS)/ LCS 680-566463/19-A	Heptachlor	39.60	54 - 130	10 - 130	percent	J/UJ	C	
LCS 680-566463/19-A (BS)/ LCS 680-566463/19-A	p,p'-DDE	55.60	57 - 135	10 - 135	percent	J/UJ	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the LCS Recovery for SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-03-07_SPR19	N	Aldrin	0.0260	0.00920 U Q	0.00920 UJ		ug/l	C/I
LFM-03-07_SPR19	N	Heptachlor	0.0260	0.00920 U Q	0.00920 UJ		ug/l	C/I
LFM-03-07_SPR19	N	p,p'-DDE	0.0260	0.00510 U M Q	0.00510 UJ		ug/l	C/I
LFM-99-02B_SPR19	N	Aldrin	0.0240	0.00860 U Q	0.00860 UJ		ug/l	C
LFM-99-02B_SPR19	N	Heptachlor	0.0240	0.00860 U Q	0.00860 UJ		ug/l	C
LFM-99-02B_SPR19	N	p,p'-DDE	0.0240	0.00480 U Q	0.00480 UJ		ug/l	C
LFM-99-05A_SPR19	N	Aldrin	0.0260	0.00930 U Q	0.00930 UJ		ug/l	C
LFM-99-05A_SPR19	N	Heptachlor	0.0260	0.00930 U Q	0.00930 UJ		ug/l	C
LFM-99-05A_SPR19	N	p,p'-DDE	0.0260	0.00510 U M Q	0.00510 UJ		ug/l	C
LFM-99-06ARP_SPR19	N	Aldrin	0.0240	0.00870 U Q	0.00870 UJ		ug/l	C
LFM-99-06ARP_SPR19	N	Heptachlor	0.0240	0.00870 U Q	0.00870 UJ		ug/l	C
LFM-99-06ARP_SPR19	N	p,p'-DDE	0.0240	0.00480 U M Q	0.00480 UJ		ug/l	C
LFM-DUP01_SPR19	FD	Aldrin	0.0250	0.00900 U Q	0.00900 UJ		ug/l	C
LFM-DUP01_SPR19	FD	Heptachlor	0.0250	0.00900 U Q	0.00900 UJ		ug/l	C
LFM-DUP01_SPR19	FD	p,p'-DDE	0.0250	0.00500 U Q	0.00500 UJ		ug/l	C

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8081B, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-02B_SPR19 (SD)/ 680-167491-3	Aldrin	58.30	< 30	< 30	rpd	J/None	D	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8081B, Prep Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of extraction found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-05A_SPR19 (N)/ 680-167491-4		7.050	< 7	< 14	days	J/UJ	H2	Prep Exceeds UWL
LFM-DUP01_SPR19 (FD)/ 680-167491-5		7.050	< 7	< 14	days	J/UJ	H2	Prep Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8081B, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-03-07_SPR19 (N)/ 680-167491-1	2,4,5,6-Tetrachloro-meta-xylene	38.03	44 - 124	10 - 124	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-03-07_SPR19	N	Aldrin	0.0260	0.00920 U Q	0.00920 UJ		ug/l	C/I
LFM-03-07_SPR19	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	alpha-Endosulfan	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	beta-BHC (beta-Hexachlorocyclohexane)	0.0260	0.00920 U	0.00920 UJ		ug/l	I
LFM-03-07_SPR19	N	beta-Endosulfan	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Chlordane	0.260	0.150 U	0.150 UJ		ug/l	I
LFM-03-07_SPR19	N	delta-BHC (delta-Hexachlorocyclohexane)	0.0260	0.00920 U	0.00920 UJ		ug/l	I
LFM-03-07_SPR19	N	Dieldrin	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Endosulfan sulfate	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Endrin	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Endrin aldehyde	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Endrin ketone	0.0260	0.00510 U M	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	gamma-BHC (Lindane)	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Heptachlor	0.0260	0.00920 U Q	0.00920 UJ		ug/l	C/I
LFM-03-07_SPR19	N	Heptachlor epoxide	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Methoxychlor	0.0260	0.00920 U	0.00920 UJ		ug/l	I
LFM-03-07_SPR19	N	p,p'-DDD	0.0260	0.00510 U M	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	p,p'-DDE	0.0260	0.00510 U M Q	0.00510 UJ		ug/l	C/I
LFM-03-07_SPR19	N	p,p'-DDT	0.0260	0.0100 J	0.0100 J	-	ug/l	I/TR
LFM-03-07_SPR19	N	Toxaphene	2.60	0.410 U M	0.410 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW9056A, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-02B_SPR19 (MS)/ 680-167491-3	Chloride	86.00	90 - 110	10 - 110	percent	J/UJ	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the MS Recovery for SW9056A

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-02B_SPR19	N	Chloride	2.50	180 D	180 J	-	mg/l	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: SW6010C	Extraction Method: , Total							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-05A_SPR19	N	Iron	50.0	130	130 J		ug/l	D3
LFM-DUP01_SPR19	FD	Iron	50.0	490	490 J		ug/l	D3

Test Method: SW8081B	Extraction Method: SW3520C							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-03-07_SPR19	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	alpha-Endosulfan	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	beta-BHC (beta-Hexachlorocyclohexane)	0.0260	0.00920 U	0.00920 UJ		ug/l	I
LFM-03-07_SPR19	N	beta-Endosulfan	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Chlordane	0.260	0.150 U	0.150 UJ		ug/l	I
LFM-03-07_SPR19	N	delta-BHC (delta-Hexachlorocyclohexane)	0.0260	0.00920 U	0.00920 UJ		ug/l	I
LFM-03-07_SPR19	N	Dieldrin	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Endosulfan sulfate	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Endrin	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Endrin aldehyde	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Endrin ketone	0.0260	0.00510 U M	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	gamma-BHC (Lindane)	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Heptachlor	0.0260	0.00920 U Q	0.00920 UJ		ug/l	C/I
LFM-03-07_SPR19	N	Heptachlor epoxide	0.0260	0.00510 U	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	Methoxychlor	0.0260	0.00920 U	0.00920 UJ		ug/l	I
LFM-03-07_SPR19	N	p,p'-DDD	0.0260	0.00510 U M	0.00510 UJ		ug/l	I
LFM-03-07_SPR19	N	p,p'-DDE	0.0260	0.00510 U M Q	0.00510 UJ		ug/l	C/I
LFM-03-07_SPR19	N	p,p'-DDT	0.0260	0.0100 J	0.0100 J	-	ug/l	I/TR
LFM-03-07_SPR19	N	Toxaphene	2.60	0.410 U M	0.410 UJ		ug/l	I
LFM-03-07_SPR19	N	Aldrin	0.0260	0.00920 U Q	0.00920 UJ		ug/l	C/I
LFM-99-02B_SPR19	N	Aldrin	0.0240	0.00860 U Q	0.00860 UJ		ug/l	C
LFM-99-02B_SPR19	N	Heptachlor	0.0240	0.00860 U Q	0.00860 UJ		ug/l	C
LFM-99-02B_SPR19	N	p,p'-DDE	0.0240	0.00480 U Q	0.00480 UJ		ug/l	C
LFM-99-05A_SPR19	N	Aldrin	0.0260	0.00930 U Q	0.00930 UJ		ug/l	C
LFM-99-05A_SPR19	N	Heptachlor	0.0260	0.00930 U Q	0.00930 UJ		ug/l	C
LFM-99-05A_SPR19	N	p,p'-DDE	0.0260	0.00510 U M Q	0.00510 UJ		ug/l	C
LFM-99-06ARP_SPR19	N	Aldrin	0.0240	0.00870 U Q	0.00870 UJ		ug/l	C
LFM-99-06ARP_SPR19	N	Heptachlor	0.0240	0.00870 U Q	0.00870 UJ		ug/l	C
LFM-99-06ARP_SPR19	N	p,p'-DDE	0.0240	0.00480 U M Q	0.00480 UJ		ug/l	C
LFM-DUP01_SPR19	FD	Aldrin	0.0250	0.00900 U Q	0.00900 UJ		ug/l	C
LFM-DUP01_SPR19	FD	Heptachlor	0.0250	0.00900 U Q	0.00900 UJ		ug/l	C
LFM-DUP01_SPR19	FD	p,p'-DDE	0.0250	0.00500 U Q	0.00500 UJ		ug/l	C

Table of All Qualified Results

Test Method: SW9056A	Extraction Method: NONE							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-02B_SPR19	N	Chloride	2.50	180 D	180 J	-	mg/l	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
LFM-99-05A_SPR19	N	Aldrin	0.0260	0.00930 U Q	0.00930 UJ	0.00930 UJ	C
LFM-99-05A_SPR19	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0260	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A_SPR19	N	alpha-Endosulfan	0.0260	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A_SPR19	N	beta-BHC (beta-Hexachlorocyclohexane)	0.0260	0.00930 U	0.00930 UJ	0.00930 U	
LFM-99-05A_SPR19	N	beta-Endosulfan	0.0260	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A_SPR19	N	Chlordane	0.260	0.150 U	0.150 UJ	0.150 U	
LFM-99-05A_SPR19	N	delta-BHC (delta-Hexachlorocyclohexane)	0.0260	0.00930 U	0.00930 UJ	0.00930 U	
LFM-99-05A_SPR19	N	Dieldrin	0.0260	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A_SPR19	N	Endosulfan sulfate	0.0260	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A_SPR19	N	Endrin	0.0260	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A_SPR19	N	Endrin aldehyde	0.0260	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A_SPR19	N	Endrin ketone	0.0260	0.00510 U M	0.00510 UJ	0.00510 U	
LFM-99-05A_SPR19	N	gamma-BHC (Lindane)	0.0260	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A_SPR19	N	Heptachlor	0.0260	0.00930 U Q	0.00930 UJ	0.00930 UJ	C
LFM-99-05A_SPR19	N	Heptachlor epoxide	0.0260	0.00510 U	0.00510 UJ	0.00510 U	
LFM-99-05A_SPR19	N	Methoxychlor	0.0260	0.00930 U	0.00930 UJ	0.00930 U	
LFM-99-05A_SPR19	N	p,p'-DDD	0.0260	0.00510 U M	0.00510 UJ	0.00510 U	
LFM-99-05A_SPR19	N	p,p'-DDE	0.0260	0.00510 U M Q	0.00510 UJ	0.00510 UJ	C
LFM-99-05A_SPR19	N	p,p'-DDT	0.0260	0.00930 U	0.00930 UJ	0.00930 U	
LFM-99-05A_SPR19	N	Toxaphene	2.60	0.410 U M	0.410 UJ	0.410 U	
LFM-DUP01_SPR19	FD	Aldrin	0.0250	0.00900 U Q	0.00900 UJ	0.00900 UJ	C
LFM-DUP01_SPR19	FD	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
LFM-DUP01_SPR19	FD	alpha-Endosulfan	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
LFM-DUP01_SPR19	FD	beta-BHC (beta-Hexachlorocyclohexane)	0.0250	0.00900 U	0.00900 UJ	0.00900 U	
LFM-DUP01_SPR19	FD	beta-Endosulfan	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
LFM-DUP01_SPR19	FD	Chlordane	0.250	0.150 U	0.150 UJ	0.150 U	
LFM-DUP01_SPR19	FD	delta-BHC (delta-Hexachlorocyclohexane)	0.0250	0.00900 U	0.00900 UJ	0.00900 U	
LFM-DUP01_SPR19	FD	Dieldrin	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
LFM-DUP01_SPR19	FD	Endosulfan sulfate	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
LFM-DUP01_SPR19	FD	Endrin	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
LFM-DUP01_SPR19	FD	Endrin aldehyde	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
LFM-DUP01_SPR19	FD	Endrin ketone	0.0250	0.00500 U M	0.00500 UJ	0.00500 U	
LFM-DUP01_SPR19	FD	gamma-BHC (Lindane)	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
LFM-DUP01_SPR19	FD	Heptachlor	0.0250	0.00900 U Q	0.00900 UJ	0.00900 UJ	C
LFM-DUP01_SPR19	FD	Heptachlor epoxide	0.0250	0.00500 U	0.00500 UJ	0.00500 U	
LFM-DUP01_SPR19	FD	Methoxychlor	0.0250	0.00900 U	0.00900 UJ	0.00900 U	
LFM-DUP01_SPR19	FD	p,p'-DDD	0.0250	0.00500 U M	0.00500 UJ	0.00500 U	
LFM-DUP01_SPR19	FD	p,p'-DDE	0.0250	0.00500 U Q	0.00500 UJ	0.00500 UJ	C

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
LFM-DUP01_SPR19	FD	p,p'-DDT	0.0250	0.00900 U	0.00900 UJ	0.00900 U	
LFM-DUP01_SPR19	FD	Toxaphene	2.50	0.400 U M	0.400 UJ	0.400 U	

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
B2	CCB
C	LCS Recovery
D	MS RPD
D3	Field Duplicate RPD
H2	Prep Hold Time
I	Surrogate recovery outside project limits.
M	MS Recovery
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: A2320B (Alkalinity by Titrimetric Method)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?			•	
Were all reported analytes for the ICV within the required criteria?			•	
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -4/-5 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: A2540C (Total Dissolved Solids, Dried at 180 C)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?			•	Calibration not required for TDS.
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?			•	
Were all reported analytes for the ICV within the required criteria?			•	
Were CCVs run at the required frequency and within acceptance criteria?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?		•		
Were LCS/LCSD recoveries within project acceptance limits?			•	
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -4/-5 were FD samples. See FD report
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: E353.2 (Nitrogen, Nitrate-Nitrite (Colorimetric Automated, Cadmium Reduction))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -3 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -4/-5 were FD samples. See FD report
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: E410.4 (Chemical Oxygen Demand (Colorimetric, Automated Manual))

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -3 was spiked and analyzed as MS/MSD
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -4/-5 were FD samples. See FD report
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		See outlier report. Lead was reported in a CCB; lead was ND in all samples.
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -3 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?		•		Samples -4/-5 were FD samples. See outlier and FD reports.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -3 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -4/-5 were FD samples. See FD report
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW7470A (Mercury in Water (Manual Cold-Vapor Technique))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -3 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	Samples -4/-5 were FD samples. See FD report; Hg was ND in all samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW8081B (Organochlorine Pesticides by Capillary GC)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?		•		See outlier report.
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?		•		See outlier report.
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -3 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?		•		See outlier report.
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -4/-5 were FD samples. See FD report
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW9012B (Total and Amenable Cyanide (Automated Colorimetric, with Off-Line Distillation))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			LCS only
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -3 was spiked and analyzed as MS/MSD
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -4/-5 were FD samples. See FD report
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW9056A (Anion Chromatography)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Sample -3 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?		•		See outlier report.
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -4/-5 were FD samples. See FD report
Were QAPP specified laboratory LOQs/RLs achieved?	•			All samples were analyzed at 5X dilution due to high levels of target anions.
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Spring 2019
Field Duplicates for SDG: 6801674911

Location	Analysis
LFM-99-05A	A2320B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Alkalinity, Total (as CaCO3)	90.0	89.0	10.0	1.12	30	OK	NA

Location	Analysis
LFM-99-05A	A2540C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Total Dissolved Solids	290	290	10.0	0.00	30	OK	NA

Location	Analysis
LFM-99-05A	E353.2

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Nitrate-Nitrite (as N)	0.470	0.490	0.100	4.17	30	NA	OK

Location	Analysis
LFM-99-05A	E410.4

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Chemical Oxygen Demand	ND	ND	20.0	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Barium (TOTAL)	6.70	8.00	10.0	17.7	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Cadmium (TOTAL)	ND	ND	5.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Spring 2019
Field Duplicates for SDG: 6801674911

Location	Analysis
LFM-99-05A	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Chromium (TOTAL)	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Copper (TOTAL)	ND	ND	20.0	NA		NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Copper (TOTAL)	ND	ND	20.0	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Iron (TOTAL)	130	490	50.0	116	30	NA	360
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Lead (TOTAL)	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Manganese (TOTAL)	4.90	14.0	10.0	96.3	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Selenium (TOTAL)	ND	ND	20.0	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Silver (TOTAL)	ND	ND	10.0	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Arsenic (TOTAL)	ND	1.80	3.00	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW7470A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Mercury (TOTAL)	ND	ND	0.200	NA	30	NA	OK

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RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Spring 2019
Field Duplicates for SDG: 6801674911

Location	Analysis
LFM-99-05A	SW8081B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Aldrin	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	alpha-BHC (alpha-Hexachlorocyclohexane)	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	alpha-Endosulfan	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	beta-BHC (beta-Hexachlorocyclohexane)	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	beta-Endosulfan	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Chlordane	ND	ND	0.260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	delta-BHC (delta-Hexachlorocyclohexane)	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Dieldrin	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Endosulfan sulfate	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Endrin	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Endrin aldehyde	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Endrin ketone	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	gamma-BHC (Lindane)	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Heptachlor	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Heptachlor epoxide	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Methoxychlor	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	p,p'-DDD	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	p,p'-DDE	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	p,p'-DDT	ND	ND	0.0260	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Toxaphene	ND	ND	2.60	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Spring 2019
Field Duplicates for SDG: 6801674911

Location	Analysis
LFM-99-05A	SW9012B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Cyanide	ND	ND	0.0100	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW9056A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Chloride	98.0	97.0	2.50	1.03	30	OK	NA
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	680-167491-4 / 680-167491-5	Sulfate	20.0	20.0	5.00	0.00	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, DCL Spring 2019
SDG:	SM3545
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Solutions, LLC, Marlborough, MA
Project Manager:	Jim Ropp
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	Koman Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	June 06, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPEP	MADEPVP
LFM-03-07_SPR19	SM3545-2	Water	Field Sample/N		X
LFM-03-07_SPR19	SM3545-2RE	Water	Field Sample/N	X	
LFM-99-02B_SPR19	SM3545-6	Water	Field Sample/N		X
LFM-99-02B_SPR19	SM3545-6RE	Water	Field Sample/N	X	
LFM-99-05A_SPR19	SM3545-3	Water	Field Sample/N		X
LFM-99-05A_SPR19	SM3545-3RE	Water	Field Sample/N	X	
LFM-99-06ARP_SPR19	SM3545-5	Water	Field Sample/N		X
LFM-99-06ARP_SPR19	SM3545-5RE	Water	Field Sample/N	X	
LFM-DUP01_SPR19	SM3545-4	Water	Field Duplicate/FD		X
LFM-DUP01_SPR19	SM3545-4RE	Water	Field Duplicate/FD	X	
LFM-TRIP BLANK_SPR19	SM3545-1	Water	Trip Blank/TB		X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Solutions, LLC, Marlborough, MA; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) SM3545. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- MS Recovery
- Blank - Negative
- MS RPD
- Blank
- Field Duplicate RPD
- LCS RPD
- Prep Hold Time
- Test Hold Time
- LCS Recovery
- Surrogate
- Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 20 results (12.50%) out of the 160 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains the VPH/EPH samples results for the Spring 2019 DCL samples; which were subcontracted to Katahdin Analytical by Test America. The laboratory data package is included in Test America's SDG 680-167491-1. VPH/EPH data were reported separately in Katahdin's SDG SM3545.

Analytical Method	Data Reviewer Comment
MADEPEP	No additional comments; see Checklist for detail.
MADEPVP	No additional comments; see Checklist for detail.

June 06, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, Koman Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

June 06, 2019

Reviewed by Sherri Pullar, Senior Scientist, Koman Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPEP, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-02B_SPR19 (SD)/ WG251319-5	Dibenz (a,h)anthracene	26.05	< 25	< 25	rpd	J/None	D	
LFM-99-02B_SPR19 (SD)/ WG251319-5	Benzo (g,h,i)perylene	26.40	< 25	< 25	rpd	J/None	D	
LFM-99-02B_SPR19 (SD)/ WG251319-5	Indeno(1,2,3-c,d)pyrene	26.63	< 25	< 25	rpd	J/None	D	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method MADEPEP, Prep Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of extraction found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-05A_SPR19 (N)/ SM3545-3RE		14.12	< 14	< 28	days	J/UJ	H2	Prep Exceeds UWL
LFM-DUP01_SPR19 (FD)/ SM3545-4RE		14.12	< 14	< 28	days	J/UJ	H2	Prep Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method MADEPVP, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-03-07_SPR19 (N)/ SM3545-2	2,5-Dibromotoluene	69.60	70 - 130	10 - 130	percent	J/UJ	I	
LFM-DUP01_SPR19 (FD)/ SM3545-4	2,5-Dibromotoluene	68.60	70 - 130	10 - 130	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-03-07_SPR19	N	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
LFM-03-07_SPR19	N	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-03-07_SPR19	N	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
LFM-03-07_SPR19	N	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-03-07_SPR19	N	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-03-07_SPR19	N	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-03-07_SPR19	N	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-03-07_SPR19	N	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
LFM-03-07_SPR19	N	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	100	75.0 U	75.0 UJ		ug/l	I
LFM-03-07_SPR19	N	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-DUP01_SPR19	FD	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-DUP01_SPR19	FD	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I

Qualified Results associated with the Surrogate for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-DUP01_SPR19	FD	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	100	75.0 U	75.0 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: MADEPVP	Extraction Method: SW5030C							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-03-07_SPR19	N	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
LFM-03-07_SPR19	N	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-03-07_SPR19	N	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
LFM-03-07_SPR19	N	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-03-07_SPR19	N	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-03-07_SPR19	N	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-03-07_SPR19	N	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-03-07_SPR19	N	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
LFM-03-07_SPR19	N	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	100	75.0 U	75.0 UJ		ug/l	I
LFM-03-07_SPR19	N	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Benzene	3.00	2.00 U	2.00 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Ethylbenzene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-DUP01_SPR19	FD	m,p-Xylene	10.0	7.50 U	7.50 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Methyl tert-butyl ether (MTBE)	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Naphthalene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-DUP01_SPR19	FD	o-Xylene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Toluene	5.00	3.80 U	3.80 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	100	75.0 U	75.0 UJ		ug/l	I
LFM-DUP01_SPR19	FD	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	100	75.0 U	75.0 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
LFM-99-05A_SPR19	N	2-Methylnaphthalene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Acenaphthene	2.10	2.00 U	2.00 UJ	2.00 U	
LFM-99-05A_SPR19	N	Acenaphthylene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Anthracene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Benzo(a)anthracene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Benzo(a)pyrene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Benzo(b)fluoranthene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Benzo(g,h,i)perylene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Benzo(k)fluoranthene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	110	80.0 U	80.0 UJ	80.0 U	
LFM-99-05A_SPR19	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	110	80.0 U	80.0 UJ	80.0 U	
LFM-99-05A_SPR19	N	Chrysene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Dibenz(a,h)anthracene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Fluoranthene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Fluorene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Indeno(1,2,3-c,d)pyrene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Naphthalene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Petroleum Hydrocarbons C11-C22, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	110	80.0 U	80.0 UJ	80.0 U	
LFM-99-05A_SPR19	N	Phenanthrene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-99-05A_SPR19	N	Pyrene	2.10	1.60 U	1.60 UJ	1.60 U	
LFM-DUP01_SPR19	FD	2-Methylnaphthalene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Acenaphthene	2.00	1.90 U	1.90 UJ	1.90 U	
LFM-DUP01_SPR19	FD	Acenaphthylene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Anthracene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Benzo(a)anthracene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Benzo(a)pyrene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Benzo(b)fluoranthene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Benzo(g,h,i)perylene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Benzo(k)fluoranthene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	C19-C36 Petroleum Hydrocarbons, Aliphatic	100	76.0 U	76.0 UJ	76.0 U	
LFM-DUP01_SPR19	FD	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	76.0 U	76.0 UJ	76.0 U	
LFM-DUP01_SPR19	FD	Chrysene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Dibenz(a,h)anthracene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Fluoranthene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Fluorene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Indeno(1,2,3-c,d)pyrene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Naphthalene	2.00	1.50 U	1.50 UJ	1.50 U	

Table of Results with Modified Qualifiers

Modified Qualifiers for test method MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
LFM-DUP01_SPR19	FD	Petroleum Hydrocarbons C11-C22, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	100	76.0 U	76.0 UJ	76.0 U	
LFM-DUP01_SPR19	FD	Phenanthrene	2.00	1.50 U	1.50 UJ	1.50 U	
LFM-DUP01_SPR19	FD	Pyrene	2.00	1.50 U	1.50 UJ	1.50 U	

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
D	MS RPD
H2	Prep Hold Time
I	Surrogate recovery outside project limits.
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPEP (Method for the Determination of Extractable Petroleum Hydrocarbons (EPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Sample SM3545-6 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?		•		See outlier report.
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	Samples -3/-4 were FD samples. EPH were non-detect in both samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?			•	
Were any data rejected during the verification process?		•		

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?		•		See outlier report.
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?	•			Sample -1 was a TB sample submitted fro VPH analysis.
Were target analytes reported in the field blank(s) less than MDL?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Sample SM3545-6 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	Samples -3/-4 were FD samples. VPH were non-detect in both samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?			•	
Were any data rejected during the verification process?		•		

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Spring 2019
Field Duplicates for SDG: SM3545

Location	Analysis
LFM-99-05A	MADEPEP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	2-Methylnaphthalene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Acenaphthene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Acenaphthylene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Anthracene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Benzo(a)anthracene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Benzo(a)pyrene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Benzo(b)fluoranthene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Benzo(g,h,i)perylene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Benzo(k)fluoranthene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	C19-C36 Petroleum Hydrocarbons, Aliphatic	ND	ND	110	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	C9-C18 Petroleum Hydrocarbons, Aliphatic	ND	ND	110	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Chrysene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Dibenz(a,h)anthracene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Fluoranthene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Fluorene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Indeno(1,2,3-c,d)pyrene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Naphthalene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Petroleum Hydrocarbons C11-C22, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	110	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Phenanthrene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3RE / SM3545-4RE	Pyrene	ND	ND	2.10	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Spring 2019
Field Duplicates for SDG: SM3545

Location	Analysis
LFM-99-05A	MADEPVP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3 / SM3545-4	Benzene	ND	ND	3.00	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3 / SM3545-4	Ethylbenzene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3 / SM3545-4	m,p-Xylene	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3 / SM3545-4	Methyl tert-butyl ether (MTBE)	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3 / SM3545-4	Naphthalene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3 / SM3545-4	o-Xylene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3 / SM3545-4	Toluene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3 / SM3545-4	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3 / SM3545-4	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	ND	ND	100	NA	30	NA	OK
LFM-99-05A_SPR19 / LFM-DUP01_SPR19	SM3545-3 / SM3545-4	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

C.2

Data Validation Reports
Fall 2019 LTM Event

Data Validation Report for 6801750522

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, AOC 69W Fall 2019
SDG:	6801750522
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Services, LLC
Project Manager:	Jim Ropp
Contract Laboratory(ies):	TestAmerica Laboratories, Inc., Savannah, GA
Data Review Contractor:	Koman Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	December 09, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW6010C - Dissolved	SW6020A - Dissolved
69W-94-13_FAL19	680-175052-2	Water	Field Sample/N	X	X
69W-94-14_FAL19	680-175052-13	Water	Field Sample/N	X	X
69W-DUP1_FAL19	680-175052-9	Water	Field Duplicate/FD	X	X
69WP-08-01_FAL19	680-175052-10	Water	Field Sample/N	X	X
69WP-13-01_FAL19	680-175052-11	Water	Field Sample/N	X	
ZWM-01-25X_FAL19	680-175052-7	Water	Field Sample/N	X	X
ZWM-95-15X_FAL19	680-175052-12	Water	Field Sample/N	X	X
ZWM-95-18X_FAL19	680-175052-6	Water	Field Sample/N	X	X
ZWM-99-22X_FAL19	680-175052-8	Water	Field Sample/N	X	X
ZWM-99-23X_FAL19	680-175052-14	Water	Field Sample/N	X	X
ZWM-99-24X_FAL19	680-175052-3	Water	Field Sample/N	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Services, LLC; analyses were performed by TestAmerica Laboratories, Inc., Savannah, GA and were reported under sample delivery group (SDG) 6801750522. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Field Duplicate RPD
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- LCS Recovery
- MS Recovery
- MS RPD
- Prep Hold Time
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 1 results (3.23%) out of the 31 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains the AOC69W Fall 2019 samples; 10 GW sample and 1 FD sample.

Analytical Method	Data Reviewer Comment
SW6010C	Samples were field filtered and reported for dissolved Fe and/or Mn.
SW6020A	Samples were field filtered and reported for dissolved As.

November 21, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, Koman Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

December 09, 2019

Reviewed by Sherri Pullar, Senior Scientist, Koman Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW6010C, Dissolved, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
ZWM-95-15X_FAL19 (MS)/ 680-175052-12	Manganese	135.0	90 - 114	10 - 125	percent	J/None	M	
ZWM-95-15X_FAL19 (SD)/ 680-175052-12	Manganese	80.00	90 - 114	10 - 125	percent	J/UJ	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the MS Recovery for SW6010C, Dissolved

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ZWM-95-15X_FAL19	N	Manganese	10.0	690 J1	690 J		ug/l	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: SW6010C	Extraction Method: , Dissolved							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ZWM-95-15X_FAL19	N	Manganese	10.0	690 J1	690 J		ug/l	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
M	MS Recovery
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?				
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -12 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?		•		See outlier report.
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -8/-9 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -12 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -8/-9 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Field Duplicates for SDG: 6801750522

Location	Analysis
ZWM-99-22X	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	680-175052-8 / 680-175052-9	Iron (FLDFLT)	10000	9800	50.0	2.02	30	OK	NA
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	680-175052-8 / 680-175052-9	Manganese (FLDFLT)	1100	1100	10.0	0.00	30	OK	NA

Location	Analysis
ZWM-99-22X	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	680-175052-8 / 680-175052-9	Arsenic (FLDFLT)	150	140	3.00	6.90	30	OK	NA

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Data Validation Report for 6801750523

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, AOC 43G Fall 2019
SDG:	6801750523
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Services, LLC
Project Manager:	Jim Ropp
Contract Laboratory(ies):	TestAmerica Laboratories, Inc., Arvada, CO
Data Review Contractor:	Koman Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	December 09, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	A2320B	SW6010C	SW6020A
AAFES-2_FAL19	680-175052-5	Water	Field Sample/N	X	X	X
XGM-94-04X_FAL19	680-175052-4	Water	Field Sample/N	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Services, LLC; analyses were performed by TestAmerica Laboratories, Inc., Arvada, CO and were reported under sample delivery group (SDG) 6801750523. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- LCS Recovery
- MS Recovery
- MS RPD
- Prep Hold Time
- Test Hold Time

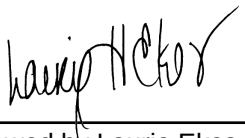
Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 0 results (0.00%) out of the 8 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains 2 samples from the AOC43G Fall 2019 sampling event

Analytical Method	Data Reviewer Comment
SW6010C	Samples were submitted for total Fe and Mn by method 6010.
SW6020A	Samples were submitted for total As by method 6020A.
A2320B	No additional comments; see Checklist for detail.



December 06, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, Koman Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.



December 09, 2019

Reviewed by Sherri Pullar, Senior Scientist, Koman Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW6010C, Total, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
XGM-94-04X_FAL19 (MS)/ 680-175052-4	Manganese	140.0	90 - 114	10 - 125	percent	J/None	M	Spike amount Insignificant
XGM-94-04X_FAL19 (SD)/ 680-175052-4	Manganese	70.00	90 - 114	10 - 125	percent	J/UJ	M	Spike amount Insignificant

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Qualified Results

No results associated with this sample delivery group required qualification.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
M	MS Recovery
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: A2320B (Alkalinity by Titrimetric Method)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -4 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?		•		See outlier report. The native sample results for Mn was greater than 4X the spike level.
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -4 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Data Validation Report for 6801755712

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, AOC 43G Fall 2019
SDG:	6801755712
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Services, LLC
Project Manager:	Jim Ropp
Contract Laboratory(ies):	TestAmerica Laboratories, Inc., Savannah, GA
Data Review Contractor:	KOMAN Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW6010C	SW6020A
AAFES-7_FAL19	680-175571-14	Water	Field Sample/N	X	X
XGM-94-06X_FAL19	680-175571-15	Water	Field Sample/N	X	
XGM-94-07X_FAL19	680-175571-16	Water	Field Sample/N	X	
XGM-94-08X_FAL19	680-175571-17	Water	Field Sample/N	X	

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Services, LLC; analyses were performed by TestAmerica Laboratories, Inc., Savannah, GA and were reported under sample delivery group (SDG) 6801755712. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- LCS Recovery
- Prep Hold Time
- Test Hold Time

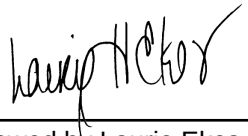
Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 0 results (0.00%) out of the 9 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains 4 GW samples from AOC43G Fall LTM sampling event.

Analytical Method	Data Reviewer Comment
SW6010C	All samples were submitted for Total Iron and Manganese analysis.
SW6020A	Sample -14 was submitted for total arsenic analysis.



November 22, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, KOMAN Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

No Outliers were associated with this sample delivery group.

Qualified Results

No results associated with this sample delivery group required qualification.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.

X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Data Validation Report for TM0499

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, AOC 43G Fall 2019
SDG:	TM0499
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Services, LLC
Project Manager:	Jim Ropp
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	KOMAN Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	December 09, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPVP
AAFES-2_FAL19	TM0499-1	Water	Field Sample/N	X
AAFES-2_FAL19	TM0499-1DL	Water	Field Sample/N	X
XGM-94-04X_FAL19	TM0499-2	Water	Field Sample/N	X
XGM-94-04X_FAL19	TM0499-2DL	Water	Field Sample/N	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Services, LLC; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) TM0499. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Lab Blank
- LCS Recovery
- LCS RPD
- MS Recovery
- MS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 0 results (0.00%) out of the 20 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains 2 samples from the AOC43G Fall 2019 sampling event.
Samples for VPH analysis were subcontracted to Katahdin and reported in Katahdin SDG TM0499.

Analytical Method	Data Reviewer Comment
MADEPVP	No additional comments; see Checklist for detail.

December 05, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, KOMAN Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

December 09, 2019

Reviewed by Sherri Pullar, Senior Scientist, KOMAN Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPVP, Lab Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG264149-1 (LB)/ WG264149-1	Naphthalene	1.700	< 1.6	< 5	ug/l	U/None	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Qualified Results

No results associated with this sample delivery group required qualification.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
L	Lab Blank
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		See outlier report.
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Sample TM0499-2 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?		•		Native sample results were >4X the spike levels.
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			Both samples required re-analyzed as dilution due to high levels of target VPH carbon ranges.
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, AOC 43G Fall 2019
SDG:	TM0709
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Services, LLC
Project Manager:	Jim Ropp
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	KOMAN Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	December 09, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPVP
43G-EB-100919	TM0709-4	Water	Equipment Blank/EB	X
XGM-93-02X_FAL19	TM0709-1	Water	Field Sample/N	X
XGM-97-12X_FAL19	TM0709-2	Water	Field Sample/N	X
XGM-97-12X_FAL19	TM0709-2DL	Water	Field Sample/N	X
XGM-DUP1_FAL19	TM0709-3	Water	Field Duplicate/FD	X
XGM-DUP1_FAL19	TM0709-3DL	Water	Field Duplicate/FD	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Services, LLC; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) TM0709. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Equipment Blank
- Field Duplicate RPD
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 2 results (5.00%) out of the 40 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains 2 samples, 1 FD sample and 1 EB sample from AOC43G Fall 2019 sampling event. Samples for VPH analysis were subcontracted to Katahdin and reported in Katahdin SDG TM0709.

Analytical Method	Data Reviewer Comment
MADEPVP	No additional comments; see Checklist for detail.

November 27, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, KOMAN Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

December 09, 2019

Reviewed by Sherri Pullar, Senior Scientist, KOMAN Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPVP, Equipment Blank

The purpose of equipment blanks is to determine the existence and magnitude of cross-contamination problems resulting from the process during sampling. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in equipment blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
43G-EB-100919 (EB)/ TM0709-4	Naphthalene	1.600	< 1.6	< 5	ug/l	U/None	V	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Equipment Blank for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
XGM-93-02X_FAL19	N	Naphthalene	5.00	1.80 J	5.00 U		ug/l	V/L

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method MADEPVP, Lab Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG264423-1 (LB)/ WG264423-1	Naphthalene	1.600	< 1.6	< 5	ug/l	U/None	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Lab Blank for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
43G-EB-100919	EB	Naphthalene	5.00	1.60 J	5.00 U		ug/l	L
XGM-93-02X_FAL19	N	Naphthalene	5.00	1.80 J	5.00 U		ug/l	V/L

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: MADEPVP	Extraction Method: SW5030C							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
43G-EB-100919	EB	Naphthalene	5.00	1.60 J	5.00 U		ug/l	L
XGM-93-02X_FAL19	N	Naphthalene	5.00	1.80 J	5.00 U		ug/l	V/L

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
L	Lab Blank
TR	Trace Level Detect
V	Equipment Blank

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		See outlier report.
Were target analytes reported in the field blank(s) less than MDL?		•		See outlier report.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Sample TM0709-2/-3 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			Samples -2/-3 were re-analyzed at 2X dilutions due to high levels of TPH.
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?			•	
Were any data rejected during the verification process?		•		

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Field Duplicates for SDG: TM0709

Location	Analysis
XGM-97-12X	MADEPVP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	TM0709-2 / TM0709-3	Benzene	ND	ND	3.00	NA	30	NA	OK
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	TM0709-2 / TM0709-3	Ethylbenzene	2.10	2.70	5.00	25.0	30	NA	OK
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	TM0709-2 / TM0709-3	m,p-Xylene	10.0	13.0	10.0	26.1	30	NA	OK
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	TM0709-2 / TM0709-3	Methyl tert-butyl ether (MTBE)	ND	ND	5.00	NA	30	NA	OK
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	TM0709-2 / TM0709-3	Naphthalene	11.0	13.0	5.00	16.7	30	NA	OK
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	TM0709-2 / TM0709-3	o-Xylene	1.60	1.70	5.00	6.06	30	NA	OK
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	TM0709-2 / TM0709-3	Toluene	1.60	1.70	5.00	6.06	30	NA	OK
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	TM0709-2 / TM0709-3	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	350	360	100	2.82	30	NA	OK
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	TM0709-2DL / TM0709-3DL	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	340	340	200	0.00	30	NA	OK
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	TM0709-2DL / TM0709-3DL	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	150	160	200	6.45	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, AOC 43G Fall 2019
SDG:	6801753052
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Services, LLC
Project Manager:	Jim Ropp
Contract Laboratory(ies):	TestAmerica Laboratories, Inc., Arvada, CO
Data Review Contractor:	Koman Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	December 09, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	A2320B	SW6010C	SW6020A
43G-EB_100919	680-175305-7	Water	Equipment Blank/EB	X	X	X
XGM-93-02X_FAL19	680-175305-4	Water	Field Sample/N	X	X	X
XGM-97-12X_FAL19	680-175305-5	Water	Field Sample/N	X	X	X
XGM-DUP1_FAL19	680-175305-6	Water	Field Duplicate/FD	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Services, LLC; analyses were performed by TestAmerica Laboratories, Inc., Arvada, CO and were reported under sample delivery group (SDG) 6801753052. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Equipment Blank
- Field Duplicate RPD
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- Lab Replicate RPD
- LCS Recovery
- MS Recovery
- MS RPD
- Prep Hold Time
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 0 results (0.00%) out of the 16 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains 2 samples, 1 FD sample and 1 EB sample from AOC43G Fall 2019 sampling event

Analytical Method	Data Reviewer Comment
SW6010C	Samples were submitted for total Fe and Mn by method 6010.
SW6020A	Samples were submitted for total As by method 6020.
A2320B	No additional comments; see Checklist for detail.

November 27, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, Koman Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

December 09, 2019

Reviewed by Sherri Pullar, Senior Scientist, Koman Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

No Outliers were associated with this sample delivery group.

Qualified Results

No results associated with this sample delivery group required qualification.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.

X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: A2320B (Alkalinity by Titrimetric Method)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?			•	
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -5/-6 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?	•			Sample -7 was an EB sample.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			LCS only
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			the laboratory selected sample -7 to spike and analyze as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -5/-6 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			The laboratory selected sample -7 to spike and analyze as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -5/-6 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 43G Fall 2019
Field Duplicates for SDG: 6801753052

Location	Analysis
XGM-97-12X	A2320B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	680-175305-5 / 680-175305-6	Alkalinity, Total (as CaCO3)	66.0	66.0	10.0	0.00	30	OK	NA

Location	Analysis
XGM-97-12X	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	680-175305-5 / 680-175305-6	Iron (TOTAL)	6200	6500	50.0	4.72	30	OK	NA
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	680-175305-5 / 680-175305-6	Manganese (TOTAL)	250	260	10.0	3.92	30	OK	NA

Location	Analysis
XGM-97-12X	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
XGM-97-12X_FAL19 / XGM-DUP1_FAL19	680-175305-5 / 680-175305-6	Arsenic (TOTAL)	18.0	23.0	3.00	24.4	30	OK	NA

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, AOC 69W Fall 2019
SDG:	TM0469
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Services, LLC
Project Manager:	Jim Ropp
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	KOMAN Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist
Second Reviewer:	Sherri Pullar, Senior Scientist
Date Submitted:	December 09, 2019

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPEP
69W-94-13_FAL19	TM0469-4	Water	Field Sample/N	X
69W-94-14_FAL19	TM0469-12	Water	Field Sample/N	X
69W-DUP1_FAL19	TM0469-10	Water	Field Duplicate/FD	X
ZWM-01-25X_FAL19	TM0469-8	Water	Field Sample/N	X
ZWM-95-15X_FAL19	TM0469-11	Water	Field Sample/N	X
ZWM-95-18X_FAL19	TM0469-7RE	Water	Field Sample/N	X
ZWM-99-22X_FAL19	TM0469-9	Water	Field Sample/N	X
ZWM-99-23X_FAL19	TM0469-6	Water	Field Sample/N	X
ZWM-99-24X_FAL19	TM0469-5	Water	Field Sample/N	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Services, LLC; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) TM0469. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Field Duplicate RPD
- Lab Blank
- LCS Recovery
- LCS RPD
- MS Recovery
- MS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 6 results (3.33%) out of the 180 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains the AOC69W Fall 2019 samples; 8 GW samples and 1 FD sample. Samples for EPH analysis were subcontracted to Katahdin and reported in Katahdin SDG TM0469.

Analytical Method	Data Reviewer Comment
MADEPEP	No additional comments; see Checklist for detail.

November 22, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, KOMAN Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

December 09, 2019

Reviewed by Sherri Pullar, Senior Scientist, KOMAN Government Solutions, LLC

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method MADEPEP, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG263992-3RA (BD)/ WG263992-3RA	Acenaphthylene	25.40	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Acenaphthene	25.47	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Petroleum Hydrocarbons C11 -C22, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	25.70	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Benzo(a)pyrene	26.00	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Benzo (a)anthracene	26.06	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Chrysene	26.59	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Benzo (g,h,i)perylene	26.63	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Fluorene	26.83	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Fluoranthene	27.04	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Anthracene	27.30	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Pyrene	27.52	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Phenanthrene	27.68	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Indeno(1,2,3-c,d)pyrene	28.11	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Benzo (k)fluoranthene	31.97	< 25	< 25	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method MADEPEP, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
69W-94-13_FAL19 (N)/ TM0469-4	5-alpha-Androstane	32.90	40 - 140	10 - 140	percent	J/UJ	I	
ZWM-01-25X_FAL19 (N)/ TM0469-8	5-alpha-Androstane	15.00	40 - 140	10 - 140	percent	J/UJ	I	
ZWM-99-22X_FAL19 (N)/ TM0469-9	5-alpha-Androstane	34.70	40 - 140	10 - 140	percent	J/UJ	I	
ZWM-99-24X_FAL19 (N)/ TM0469-5	5-alpha-Androstane	39.60	40 - 140	10 - 140	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
69W-94-13_FAL19	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	98.0	100	100 J	-	ug/l	I
69W-94-13_FAL19	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	98.0	76.0 J	76.0 J	-	ug/l	I/TR
ZWM-01-25X_FAL19	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	100	76.0 U	76.0 UJ		ug/l	I
ZWM-01-25X_FAL19	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	76.0 U	76.0 UJ		ug/l	I
ZWM-99-22X_FAL19	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	100	130	130 J	-	ug/l	I
ZWM-99-22X_FAL19	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	65.0 J	65.0 J	-	ug/l	I/TR

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: MADEPEP	Extraction Method: SW3510C							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
69W-94-13_FAL19	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	98.0	100	100 J	-	ug/l	I
69W-94-13_FAL19	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	98.0	76.0 J	76.0 J	-	ug/l	I/TR
ZWM-01-25X_FAL19	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	100	76.0 U	76.0 UJ		ug/l	I
ZWM-01-25X_FAL19	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	76.0 U	76.0 UJ		ug/l	I
ZWM-99-22X_FAL19	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	100	130	130 J	-	ug/l	I
ZWM-99-22X_FAL19	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	100	65.0 J	65.0 J	-	ug/l	I/TR

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
69W-94-13_FAL19	N	2-Methylnaphthalene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Acenaphthene	2.00	1.90 U	1.90 UJ	1.90 U	
69W-94-13_FAL19	N	Acenaphthylene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Anthracene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Benzo(a)anthracene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Benzo(a)pyrene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Benzo(b)fluoranthene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Benzo(g,h,i)perylene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Benzo(k)fluoranthene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Chrysene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Dibenz(a,h)anthracene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Fluoranthene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Fluorene	2.00	2.40	2.40 J	2.40	
69W-94-13_FAL19	N	Indeno(1,2,3-c,d)pyrene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Naphthalene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Petroleum Hydrocarbons C11-C22, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	98.0	77.0 J	77.0 J	77.0 J	TR
69W-94-13_FAL19	N	Phenanthrene	2.00	1.50 U	1.50 UJ	1.50 U	
69W-94-13_FAL19	N	Pyrene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	2-Methylnaphthalene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Acenaphthene	2.00	1.90 U	1.90 UJ	1.90 U	
ZWM-01-25X_FAL19	N	Acenaphthylene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Anthracene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Benzo(a)anthracene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Benzo(a)pyrene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Benzo(b)fluoranthene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Benzo(g,h,i)perylene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Benzo(k)fluoranthene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Chrysene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Dibenz(a,h)anthracene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Fluoranthene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Fluorene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Indeno(1,2,3-c,d)pyrene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Naphthalene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-01-25X_FAL19	N	Petroleum Hydrocarbons C11-C22, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	100	76.0 U	76.0 UJ	76.0 U	
ZWM-01-25X_FAL19	N	Phenanthrene	2.00	1.50 U	1.50 UJ	1.50 U	

Table of Results with Modified Qualifiers

Modified Qualifiers for test method MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
ZWM-01-25X_FAL19	N	Pyrene	2.00	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	2-Methylnaphthalene	2.10	1.20 J	1.20 J	1.20 J	TR
ZWM-99-22X_FAL19	N	Acenaphthene	2.10	2.00 J	2.00 J	2.00 J	TR
ZWM-99-22X_FAL19	N	Acenaphthylene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Anthracene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Benzo(a)anthracene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Benzo(a)pyrene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Benzo(b)fluoranthene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Benzo(g,h,i)perylene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Benzo(k)fluoranthene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Chrysene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Dibenz(a,h)anthracene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Fluoranthene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Fluorene	2.10	4.40	4.40 J	4.40	
ZWM-99-22X_FAL19	N	Indeno(1,2,3-c,d)pyrene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Naphthalene	2.10	2.70	2.70 J	2.70	
ZWM-99-22X_FAL19	N	Petroleum Hydrocarbons C11-C22, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	100	220	220 J	220	
ZWM-99-22X_FAL19	N	Phenanthrene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-22X_FAL19	N	Pyrene	2.10	1.50 U	1.50 UJ	1.50 U	
ZWM-99-24X_FAL19	N	2-Methylnaphthalene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Acenaphthene	1.90	1.80 U	1.80 UJ	1.80 U	
ZWM-99-24X_FAL19	N	Acenaphthylene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Anthracene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Benzo(a)anthracene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Benzo(a)pyrene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Benzo(b)fluoranthene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Benzo(g,h,i)perylene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Benzo(k)fluoranthene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	C19-C36 Petroleum Hydrocarbons, Aliphatic	97.0	73.0 U	73.0 UJ	73.0 U	
ZWM-99-24X_FAL19	N	C9-C18 Petroleum Hydrocarbons, Aliphatic	97.0	73.0 U	73.0 UJ	73.0 U	
ZWM-99-24X_FAL19	N	Chrysene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Dibenz(a,h)anthracene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Fluoranthene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Fluorene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Indeno(1,2,3-c,d)pyrene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Naphthalene	1.90	1.40 U	1.40 UJ	1.40 U	

Table of Results with Modified Qualifiers

Modified Qualifiers for test method MADEPEP

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
ZWM-99-24X_FAL19	N	Petroleum Hydrocarbons C11-C22, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	97.0	73.0 U	73.0 UJ	73.0 U	
ZWM-99-24X_FAL19	N	Phenanthrene	1.90	1.40 U	1.40 UJ	1.40 U	
ZWM-99-24X_FAL19	N	Pyrene	1.90	1.40 U	1.40 UJ	1.40 U	

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
I	Surrogate recovery outside project limits.
TR	Trace Level Detect
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPEP (Method for the Determination of Extractable Petroleum Hydrocarbons (EPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?		•		See outlier report. The surrogate, 5-alpha-androstane, affects the aliphatic fraction of the EPH analysis. The C19-C36 and C9-C18 petroleum hydro carbon fractions were qualified as estimated (UJ/J).
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Sample -11 was spiked and analyzed as MS/MSD
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -9/-10 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?			•	
Were any data rejected during the verification process?		•		

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, AOC 69W Fall 2019
Field Duplicates for SDG: TM0469

Location	Analysis
ZWM-99-22X	MADEPEP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	2-Methylnaphthalene	1.20	1.20	2.10	0.00	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Acenaphthene	2.00	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Acenaphthylene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Anthracene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Benzo(a)anthracene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Benzo(a)pyrene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Benzo(b)fluoranthene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Benzo(g,h,i)perylene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Benzo(k)fluoranthene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	C19-C36 Petroleum Hydrocarbons, Aliphatic	130	120	100	8.00	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	C9-C18 Petroleum Hydrocarbons, Aliphatic	65.0	ND	100	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Chrysene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Dibenz(a,h)anthracene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Fluoranthene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Fluorene	4.40	4.20	2.10	4.65	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Indeno(1,2,3-c,d)pyrene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Naphthalene	2.70	3.60	2.10	28.6	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Petroleum Hydrocarbons C11-C22, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	220	230	100	4.44	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Phenanthrene	ND	ND	2.10	NA	30	NA	OK
ZWM-99-22X_FAL19 / 69W-DUP1_FAL19	TM0469-9 / TM0469-10	Pyrene	ND	ND	2.10	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, DCL Fall 2019
SDG:	6801753051
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Services, LLC
Project Manager:	Jim Ropp
Contract Laboratory(ies):	TestAmerica Laboratories, Inc., Arvada, CO
Data Review Contractor:	Koman Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	A2320B	A2540C	E353.2	E410.4	SW6010C	SW6020A	SW7470A	SW8081B	SW8082A	SW9012B	SW9056A
LFM-99-05A_FAL19	680-175305-1	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X	X
LFM-99-06ARP_FAL19	680-175305-3	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X	X
LFM-DUP01_FAL19	680-175305-2	Water	Field Duplicate/FD	X	X	X	X	X	X	X	X	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Services, LLC; analyses were performed by TestAmerica Laboratories, Inc., Arvada, CO and were reported under sample delivery group (SDG) 6801753051. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Field Duplicate RPD
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

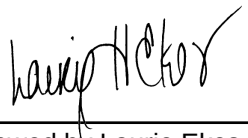
Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 2 results (1.48%) out of the 135 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains 2 GW samples and 1 FD sample from Fall DCL LTM sampling event.

Analytical Method	Data Reviewer Comment
SW6020A	Samples were submitted for Total As by method 6020A
SW9012B	No additional comments; see Checklist for detail.
SW6010C	Samples were submitted for Total Ba, Cd, Cr, Cu, Fe, Pb, Mn Se, Ag
SW8081B	No additional comments; see Checklist for detail.
SW9056A	No additional comments; see Checklist for detail.
E410.4	No additional comments; see Checklist for detail.
A2320B	No additional comments; see Checklist for detail.
E353.2	No additional comments; see Checklist for detail.
SW7470A	No additional comments; see Checklist for detail.
A2540C	No additional comments; see Checklist for detail.



December 09, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, Koman Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

Quality Control Outliers for test method SW9012B, Calibration Blank

The purpose of calibration blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in calibration blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCB 680-592328/2-A (CB)/ CCB 680-592328/2-A	Cyanide	0.002640	< 0.0025	< 0.01	mg/l	U/None	B2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Calibration Blank for SW9012B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-05A_FAL19	N	Cyanide	0.0100	0.00270 J	0.0100 U		mg/l	B2
LFM-99-06ARP_FAL19	N	Cyanide	0.0100	0.00640 J	0.0100 U		mg/l	B2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW9012B, Test Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of analysis found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-05A_FAL19 (N)/ 680-175305-1		14.27	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
LFM-99-06ARP_FAL19 (N)/ 680-175305-3		14.17	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL
LFM-DUP01_FAL19 (FD)/ 680-175305-2		14.26	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Table of All Qualified Results

Test Method: SW9012B	Extraction Method: METHOD							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-05A_FAL19	N	Cyanide	0.0100	0.00270 J	0.0100 U		mg/l	B2
LFM-99-06ARP_FAL19	N	Cyanide	0.0100	0.00640 J	0.0100 U		mg/l	B2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW9012B

FieldSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
LFM-99-05A_FAL19	N	Cyanide	0.0100	0.00500 J	0.0100 U	0.0100 U	B2
LFM-99-06ARP_FAL19	N	Cyanide	0.0100	0.00500 J	0.0100 U	0.0100 U	B2
LFM-DUP01_FAL19	FD	Cyanide	0.0100	0.00500 U	0.00500 UJ	0.00500 U	

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
B2	CCB
H1	Test Hold Time
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: A2320B (Alkalinity by Titrimetric Method)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Sample -1/-2 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: A2540C (Total Dissolved Solids, Dried at 180 C)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -1/-2 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: E353.2 (Nitrogen, Nitrate-Nitrite (Colorimetric Automated, Cadmium Reduction))

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -1/-2 were FD samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: E410.4 (Chemical Oxygen Demand (Colorimetric, Automated Manual))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -1/-2 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -1/-2 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -1/-2 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW7470A (Mercury in Water (Manual Cold-Vapor Technique))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -1/-2 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW8081B (Organochlorine Pesticides by Capillary GC)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -1/-2 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW9012B (Total and Amenable Cyanide (Automated Colorimetric, with Off-Line Distillation))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		See outlier report.
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -1/-2 were FD samples. CN was ND in both samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW9056A (Anion Chromatography)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -1/-2 were FD samples. See FD report.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Fall 2019
Field Duplicates for SDG: 6801753051

Location	Analysis
LFM-99-05A	A2320B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Alkalinity, Total (as CaCO3)	88.0	89.0	10.0	1.13	30	OK	NA

Location	Analysis
LFM-99-05A	A2540C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Total Dissolved Solids	540	530	10.0	1.87	30	OK	NA

Location	Analysis
LFM-99-05A	E353.2

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Nitrate-Nitrite (as N)	0.820	0.920	0.100	11.5	30	OK	NA

Location	Analysis
LFM-99-05A	E410.4

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Chemical Oxygen Demand	ND	ND	20.0	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Barium (TOTAL)	22.0	24.0	10.0	8.70	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Cadmium (TOTAL)	ND	ND	5.00	NA	30	NA	OK

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RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Fall 2019
Field Duplicates for SDG: 6801753051

Location	Analysis
LFM-99-05A	SW6010C

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Chromium (TOTAL)	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Copper (TOTAL)	ND	ND	20.0	NA		NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Copper (TOTAL)	ND	ND	20.0	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Iron (TOTAL)	34.0	ND	50.0	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Lead (TOTAL)	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Manganese (TOTAL)	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Selenium (TOTAL)	ND	ND	20.0	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Silver (TOTAL)	ND	ND	10.0	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW6020A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Arsenic (TOTAL)	ND	ND	3.00	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW7470A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Mercury (TOTAL)	ND	ND	0.200	NA	30	NA	OK

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RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Fall 2019
Field Duplicates for SDG: 6801753051

Location	Analysis
LFM-99-05A	SW8081B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Aldrin	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	alpha-BHC (alpha-Hexachlorocyclohexane)	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	alpha-Endosulfan	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	beta-BHC (beta-Hexachlorocyclohexane)	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	beta-Endosulfan	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Chlordane	ND	ND	0.250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	delta-BHC (delta-Hexachlorocyclohexane)	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Dieldrin	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Endosulfan sulfate	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Endrin	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Endrin aldehyde	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Endrin ketone	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	gamma-BHC (Lindane)	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Heptachlor	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Heptachlor epoxide	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Methoxychlor	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	p,p'-DDD	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	p,p'-DDE	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	p,p'-DDT	ND	ND	0.0250	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Toxaphene	ND	ND	2.50	NA	30	NA	OK

FD = Field Duplicate
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RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Fall 2019
Field Duplicates for SDG: 6801753051

Location	Analysis
LFM-99-05A	SW8082A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	PCB-1016 (Aroclor 1016)	ND	ND	0.510	NA	35	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	PCB-1221 (Aroclor 1221)	ND	ND	0.510	NA	35	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	PCB-1232 (Aroclor 1232)	ND	ND	0.510	NA	35	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	PCB-1242 (Aroclor 1242)	ND	ND	0.510	NA	35	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	PCB-1248 (Aroclor 1248)	ND	ND	0.510	NA	35	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	PCB-1254 (Aroclor 1254)	ND	ND	0.510	NA	35	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	PCB-1260 (Aroclor 1260)	ND	ND	0.510	NA	35	NA	OK

Location	Analysis
LFM-99-05A	SW9012B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Cyanide	ND	ND	0.0100	NA	30	NA	OK

Location	Analysis
LFM-99-05A	SW9056A

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Chloride	220	220	2.50	0.00	30	OK	NA
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	680-175305-1 / 680-175305-2	Sulfate	21.0	21.0	1.00	0.00	30	OK	NA

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RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, DCL Fall 2019
SDG:	TM0500
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Services, LLC
Project Manager:	Jim Ropp
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	Koman Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPEP	MADEPVP
LFM-99-02B_FAL19	TM0500-1	Water	Field Sample/N	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Services, LLC; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) TM0500. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Lab Blank
- LCS Recovery
- LCS RPD
- MS Recovery
- MS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

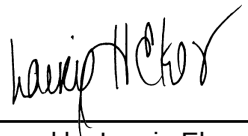
Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 0 results (0.00%) out of the 30 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains one GW sample from the Fall 2019 DCL sampling event. Sample submitted for VPH and EPH were subcontracted to Katahdin for analysis and reported under Katahdin's SDG TM0500.

Analytical Method	Data Reviewer Comment
MADEPEP	No additional comments; see Checklist for detail.
MADEPVP	No additional comments; see Checklist for detail.



December 09, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, Koman Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

Quality Control Outliers for test method MADEPEP, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-02B_FAL19 (SD)/ WG263730-7RA	C9-C18 Petroleum Hydrocarbons, Aliphatic	30.02	< 25	< 25	rpd	J/None	D	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method MADEPVP, Lab Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG264149-1 (LB)/ WG264149-1	Naphthalene	1.700	< 1.6	< 5	ug/l	U/None	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Qualified Results

No results associated with this sample delivery group required qualification.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
D	MS RPD
L	Lab Blank

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPEP (Method for the Determination of Extractable Petroleum Hydrocarbons (EPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			the sample was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?		•		See outlier report.
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			the sample was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, DCL Fall 2019
SDG:	TM0708
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Services, LLC
Project Manager:	Jim Ropp
Contract Laboratory(ies):	Katahdin Analytical Services, Westbrook, ME
Data Review Contractor:	Koman Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	MADEPEP	MADEPVP
LFM-99-05A_FAL19	TM0708-1	Water	Field Sample/N	X	X
LFM-99-06ARP_FAL19	TM0708-3	Water	Field Sample/N	X	X
LFM-DUP01_FAL19	TM0708-2	Water	Field Duplicate/FD	X	X
TRIP BLANK2_100819	TM0708-4	Water	Trip Blank/TB		X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Services, LLC; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) TM0708. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Field Duplicate RPD
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time
- Trip Blank

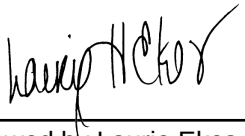
Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 1 results (1.00%) out of the 100 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains 2 GW samples and 1 FD sample from Fall DCL LTM sampling event.

Analytical Method	Data Reviewer Comment
MADEPEP	No additional comments; see Checklist for detail.
MADEPVP	No additional comments; see Checklist for detail.



December 09, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, Koman Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

Quality Control Outliers for test method MADEPEP, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG263992-3RA (BD)/ WG263992-3RA	Acenaphthylene	25.40	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Acenaphthene	25.47	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Petroleum Hydrocarbons C11 -C22, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	25.70	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Benzo(a)pyrene	26.00	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Benzo (a)anthracene	26.06	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Chrysene	26.59	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Benzo (g,h,i)perylene	26.63	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Fluorene	26.83	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Fluoranthene	27.04	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Anthracene	27.30	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Pyrene	27.52	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Phenanthrene	27.68	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Indeno(1,2,3-c,d)pyrene	28.11	< 25	< 25	rpd	J/None	Z	
WG263992-3RA (BD)/ WG263992-3RA	Benzo (k)fluoranthene	31.97	< 25	< 25	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method MADEPVP, Lab Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
WG264149-1 (LB)/ WG264149-1	Naphthalene	1.700	< 1.6	< 5	ug/l	U/None	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Lab Blank for MADEPVP

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
TRIP BLANK2_100819	TB	Naphthalene	5.00	1.80 J	5.00 U		ug/l	L

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method MADEPVP, Trip Blank

The purpose of trip blanks is to determine the existence and magnitude of cross-contamination problems resulting from the shipping of samples. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in trip blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
TRIP BLANK2_100819 (TB)/ TM0708-4	Methyl tert-butyl ether (MTBE)	1.300	< 0.31	< 5	ug/l	U/None	T	
TRIP BLANK2_100819 (TB)/ TM0708-4	Naphthalene	1.800	< 1.6	< 5	ug/l	U/None	T	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Table of All Qualified Results

Test Method: MADEPVP	Extraction Method: SW5030C							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
TRIP BLANK2_100819	TB	Naphthalene	5.00	1.80 J	5.00 U		ug/l	L

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
L	Lab Blank
T	Trip Blank
TR	Trace Level Detect
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: MADEPEP (Method for the Determination of Extractable Petroleum Hydrocarbons (EPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?		•		See outlier report.
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -1/-2 were FD samples.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: MADEPVP (Method for the Determination of Volatile Petroleum Hydrocarbons (VPH))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		See outlier report.
Were target analytes reported in the field blank(s) less than MDL?		•		See outlier report.
Were field blanks (EBs or FBs) submitted with these samples?	•			Sample -4 was a TB sample.
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			Samples -1/-2 were FD samples.
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Fall 2019
Field Duplicates for SDG: TM0708

Location	Analysis
LFM-99-05A	MADEPEP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	2-Methylnaphthalene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Acenaphthene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Acenaphthylene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Anthracene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Benzo(a)anthracene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Benzo(a)pyrene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Benzo(b)fluoranthene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Benzo(g,h,i)perylene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Benzo(k)fluoranthene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	C19-C36 Petroleum Hydrocarbons, Aliphatic	ND	ND	100	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	C9-C18 Petroleum Hydrocarbons, Aliphatic	ND	ND	100	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Chrysene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Dibenz(a,h)anthracene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Fluoranthene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Fluorene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Indeno(1,2,3-c,d)pyrene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Naphthalene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Petroleum Hydrocarbons C11-C22, Aromatic Fraction, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Phenanthrene	ND	ND	2.10	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Pyrene	ND	ND	2.10	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Long Term Monitoring
KOMAN, Long Term Monitoring, DCL Fall 2019
Field Duplicates for SDG: TM0708

Location	Analysis
LFM-99-05A	MADEPVP

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Benzene	ND	ND	3.00	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Ethylbenzene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	m,p-Xylene	ND	ND	10.0	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Methyl tert-butyl ether (MTBE)	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Naphthalene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	o-Xylene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Toluene	ND	ND	5.00	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Volatile Petroleum Hydrocarbons C5-C8 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Volatile Petroleum Hydrocarbons C9-C10 Aromatic	ND	ND	100	NA	30	NA	OK
LFM-99-05A_FAL19 / LFM-DUP01_FAL19	TM0708-1 / TM0708-2	Volatile Petroleum Hydrocarbons C9-C12 Aliphatic, Adjusted for Target Analytes, Surrogates and Internal Standards	ND	ND	100	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, DCL Fall 2019
SDG:	6801750521
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Prime Contractor:	KOMAN Government Services, LLC
Project Manager:	Jim Ropp
Contract Laboratory(ies):	TestAmerica Laboratories, Inc., Arvada, CO
Data Review Contractor:	KOMAN Government Solutions, LLC
Data Review Level:	2B
Primary Data Reviewer:	Laurie Ekes, Senior Project Chemist

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	A2320B	A2540C	E353.2	E410.4	SW6010C	SW6020A	SW7470A	SW8081B	SW8082A	SW9012B	SW9056A
LFM-99-02B_FAL19	680-175052-1	Water	Field Sample/N	X	X	X	X	X	X	X	X	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by KOMAN Government Services, LLC; analyses were performed by TestAmerica Laboratories, Inc., Arvada, CO and were reported under sample delivery group (SDG) 6801750521. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Blank - Negative
- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Interference Check Sample A
- Interference Check Sample A - Negative
- Interference Check Sample AB
- Lab Blank
- Lab Replicate RPD
- LCS Recovery
- LCS RPD
- MS Recovery
- MS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

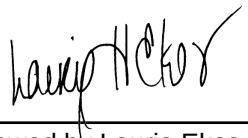
Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 2 results (4.44%) out of the 45 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency. Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Ths SDG contains one GW sample from the Fall 2019 DCL sampling event.

Analytical Method	Data Reviewer Comment
A2540C	No additional comments; see Checklist for detail.
E353.2	No additional comments; see Checklist for detail.
E410.4	No additional comments; see Checklist for detail.
SW6020A	The sample was submitted for total As by method 6020A
SW8081B	No additional comments; see Checklist for detail.
SW9012B	No additional comments; see Checklist for detail.
SW6010C	Samples were submitted for Total Ba, Cd, Cr, Cu, Fe, Pb, Mn Se, Ag
SW9056A	No additional comments; see Checklist for detail.
SW7470A	No additional comments; see Checklist for detail.
A2320B	No additional comments; see Checklist for detail.



December 06, 2019

Reviewed by Laurie Ekes, Senior Project Chemist, KOMAN Government Solutions, LLC

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of a minimum of 10% of the reported sample results and method quality control data between the two deliverables.

Quality Control Outliers for test method E353.2, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-02B_FAL19 (SD)/ 680-175052-1	Nitrate-Nitrite (as N)	80.00	90 - 110	10 - 110	percent	J/UJ	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the MS Recovery for E353.2

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-02B_FAL19	N	Nitrate-Nitrite (as N)	0.100	0.550 J1	0.550 J	-	mg/l	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method E410.4, Calibration Blank

The purpose of calibration blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in calibration blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCB 280-473414/17 (CB)/ CCB 280-473414/17	Chemical Oxygen Demand	12.80	< 8.7	< 20	mg/l	U/None	B2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Calibration Blank for E410.4

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-02B_FAL19	N	Chemical Oxygen Demand	40.0	36.0 J J1 D	40.0 UJ		mg/l	B2/L/M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method E410.4, Lab Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
MB 280-473414/5 (LB)/ MB 280-473414/5	Chemical Oxygen Demand	9.830	< 8.7	< 20	mg/l	U/None	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Lab Blank for E410.4

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-02B_FAL19	N	Chemical Oxygen Demand	40.0	36.0 J J1 D	40.0 UJ		mg/l	B2/L/M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method E410.4, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-02B_FAL19 (MS)/ 680-175052-1	Chemical Oxygen Demand	80.00	90 - 110	10 - 110	percent	J/UJ	M	
LFM-99-02B_FAL19 (SD)/ 680-175052-1	Chemical Oxygen Demand	86.00	90 - 110	10 - 110	percent	J/UJ	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the MS Recovery for E410.4

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-02B_FAL19	N	Chemical Oxygen Demand	40.0	36.0 J J1 D	40.0 UJ		mg/l	B2/L/M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW6010C, Total, Calibration Blank

The purpose of calibration blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in calibration blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCB 680-589935/104 (CB)/ CCB 680-589935/104	Selenium	12.10	< 9.9	< 20	ug/l	U/None	B2	
CCB 680-589935/104 (CB)/ CCB 680-589935/104	Barium	3.260	< 1.7	< 10	ug/l	U/None	B2	
CCB 680-589935/116 (CB)/ CCB 680-589935/116	Barium	3.420	< 1.7	< 10	ug/l	U/None	B2	
CCB 680-589935/128 (CB)/ CCB 680-589935/128	Barium	3.160	< 1.7	< 10	ug/l	U/None	B2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW6010C, Total, Lab Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
MB 680-589551/1-A (LB)/ MB 680-589551/1-A	Barium	3.250	< 1.7	< 10	ug/l	U/None	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW6010C, Total, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-02B_FAL19 (SD)/ 680-175052-1	Selenium	115.0	83 - 114	10 - 125	percent	J/None	M	
LFM-99-02B_FAL19 (MS)/ 680-175052-1	Selenium	122.0	83 - 114	10 - 125	percent	J/None	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8081B, Continuing Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCV 680-591047/6 (CV)/ CCV 680-591047/6	Chlordane	120.4	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-591047/6 (CV)/ CCV 680-591047/6	Toxaphene	124.0	80 - 120	80 - 120	percent	J/None	V2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8082A, Continuing Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCV 680-591047/34 (CV)/ CCV 680-591047/34	PCB-1260 (Aroclor 1260)	125.3	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-591047/5 (CV)/ CCV 680-591047/5	PCB-1260 (Aroclor 1260)	129.3	80 - 120	80 - 120	percent	J/None	V2	
CCV 680-591047/8 (CV)/ CCV 680-591047/8	PCB-1232 (Aroclor 1232)	122.0	80 - 120	80 - 120	percent	J/None	V2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW9056A, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LFM-99-02B_FAL19 (MS)/ 680-175052-1	Chloride	86.00	90 - 110	10 - 110	percent	J/UJ	M	Spike amount Insignificant
LFM-99-02B_FAL19 (SD)/ 680-175052-1	Chloride	88.00	90 - 110	10 - 110	percent	J/UJ	M	Spike amount Insignificant

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Table of All Qualified Results

Test Method: E353.2	**Extraction Method: NONE**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-02B_FAL19	N	Nitrate-Nitrite (as N)	0.100	0.550 J1	0.550 J	-	mg/l	M

Test Method: E410.4	**Extraction Method: NONE**							
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
LFM-99-02B_FAL19	N	Chemical Oxygen Demand	40.0	36.0 J J1 D	40.0 UJ		mg/l	B2/L/M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD).
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
B2	CCB
L	Lab Blank
M	MS Recovery
TR	Trace Level Detect
V2	CCV

Flag Code and Definitions

Flag	Definition
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
B	Blank contamination: The analyte was found in an associated blank above one half the RL, as well as in the sample.
UB	The analyte was also detected in an associated laboratory or field blank at a concentration comparable to the concentration in the sample. The reported result has been requalified as not detected.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

Review Questions

Method: A2320B (Alkalinity by Titrimetric Method)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?		•		
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: A2540C (Total Dissolved Solids, Dried at 180 C)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?			•	
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: E353.2 (Nitrogen, Nitrate-Nitrite (Colorimetric Automated, Cadmium Reduction))

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -1 was spiked and analyzed as MS/MSD
Were MS/MSD recoveries within project acceptance limits?		•		See outlier report.
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: E410.4 (Chemical Oxygen Demand (Colorimetric, Automated Manual))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		See outlier report.
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Sample -1 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?		•		see outlier report.
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6010C (Trace Metals by Inductively Coupled Plasma/Atomic Emission Spectrometry)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		See outlier report.
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -1 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?		•		See outlier report.
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW6020A (Trace Metals by Inductively Coupled Plasma/Mass Spectrometry)

Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -1 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW7470A (Mercury in Water (Manual Cold-Vapor Technique))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -1 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW8081B (Organochlorine Pesticides by Capillary GC)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?		•		See outlier report.
Were surrogate recoveries within project acceptance limits?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were field blanks (EBs or FBs) submitted with these samples?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Sample -1 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW9012B (Total and Amenable Cyanide (Automated Colorimetric, with Off-Line Distillation))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were target analytes reported in the field blank(s) less than MDL?			•	
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			LCS only
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?			•	
Was a MS/MSD pair prepared with each batch?	•			Sample -1 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Review Questions

Method: SW9056A (Anion Chromatography)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were CCVs run at the required frequency and within acceptance criteria?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?		•		
Were field blanks (EBs or FBs) submitted with these samples?		•		
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Sample -1 was spiked and analyzed as MS/MSD.
Were MS/MSD recoveries within project acceptance limits?		•		See outlier report.
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?			•	
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data rejected during the verification process?		•		

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, DCL Leach 2019
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Contract Laboratory:	TestAmerica Laboratories, Inc., Savannah, GA
Field Contractor:	KOMAN Government Solutions, LLC, Marlborough, MA
Data Review Contractor:	Koman Government Solutions, LLC
SDG:	6801759521, Certified - 12/6/2019 by laurieekes
QC Level:	2B
Project Manager:	Jim Ropp
Data Reviewer:	Laurie Ekes
Data Reviewer Title:	Senior Project Chemist
Date of Review Report: :	December 09, 2019

Analytical Method/ Leach Method	Normal Water Samples	Field QC Water Samples
A2540D/NONE	1	
M8015D/NONE	1	
SW6010C/NONE	1	
SW6020A/NONE	1	
SW7470A/NONE	1	
SW8081B/NONE	1	
SW8082A/NONE	1	
SW9012B/NONE	1	
SW9040C/NONE	1	
SW9065/NONE	1	

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 to the extent possible. Where definitive guidance is not provided, data has been evaluated in a conservative manner using professional judgment. In cases where two qualifiers are listed as an action, such as 'J/UJ', the first qualifier applies to positive results, and the second to non-detect results.

Samples were collected by KOMAN Government Solutions, LLC, Marlborough, MA; analyses were performed by TestAmerica Laboratories, Inc., Savannah, GA and were reported under sample delivery group (SDG) 6801759521. Results have been evaluated electronically using electronic data deliverables (EDDs) provided by the laboratory. The laboratory data summary forms (hard copy) have been reviewed during this effort and compared to the automated review output. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative.

The following quality control elements were supported by the electronic deliverable and were evaluated during this review effort:

Blank - Negative
Calibration Blank
Calibration Blank - Negative
Continuing Calibration Verification
Interference Check Sample A
Interference Check Sample A - Negative
Interference Check Sample AB
Lab Blank
Lab Replicate RPD
LCS Recovery
LCS RPD
MS Recovery
MS RPD
Prep Hold Time
Surrogate
Test Hold Time

The following quality control elements were either not applicable to the deliverable, or were not supported by the electronic deliverable, and were therefore not included in the automated data review. Those elements required for the project were reviewed manually, as narrated in the Comment section below.

Ambient Blank
Ending Continuing Calibration Verification
Equipment Blank
Field Blank
Field Duplicate RPD
Field Triplicate RSD
Grinding Blank
Initial Calibration Verification
Laboratory Triplicate RSD

Low Level Calibration Verification
Material Blank
Post Spike
Reference Material
Reference Material RPD
Trip Blank

A representative sampling or ten percent of sample and QC results were manually evaluated for compliance with project specific requirements and consistency with hard copy results. The following summaries were generated during the evaluation of this data set and are included in this report as applicable.

Batch – The analytical batch report is reviewed for completeness and compliance with project specific requirements. Incomplete or non-compliant run sequences are identified and their impact on data quality are discussed in the narrative.

QC Outlier – Results exceeding the evaluation criteria are reviewed for compliance with project requirements and a minimum of ten percent of the non-compliant QC values reported electronically are verified for consistency with hard-copy values.

Qualified Results – Qualified results are evaluated for compliance with project requirements and ten percent of qualified results are verified for consistency with the QC Outliers.

Rejected Results – All rejected results are evaluated for compliance with project requirements. The reason for rejection of the data is verified against hard copy data.

Field Duplicates – Field duplicate comparison results are evaluated for compliance with project requirements and ten percent of values reported are verified for consistency with the hard-copy data.

Data Submission Warnings – Warnings encountered during the data submission process are evaluated and their affect on data quality is discussed in the narrative below.

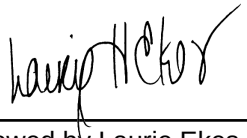
Analytical deficiencies, project non-compliance issues and inconsistencies with hard copy results observed during ADR evaluation process and their impact on data quality are summarized in the narrative below.

A total of 7 results (16.67%) out of the 42 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected. Trace values are not counted as qualified results in the above count. The qualified results are detailed in the following tables and discussed in the narrative below, where appropriate.

Narrative Comments

This SDG contains the annual DCL Leachate sample.

Analytical Method	Comment
SW6020A	The result reported for total As is acceptable as reported.
SW6010C	The results report for total Al, Cd, Cr, Cu, Pb, Ni, Ag and ZN are acceptable as reported.
SW9012B	The result reported for CN is acceptable as reported.
A2540D	The results for TSS are acceptable as reported.
SW7470A	The result reported for total Hg is acceptable as reported.
SW8081B	The results reported for Pesticides/PCBs are acceptable as reported.



Reviewed by Laurie Ekes, Senior Project Chemist

December 09, 2019

Qualified Results

Test Method: SW6010C	Extraction Method: TOTAL		Leach Method: NONE		Matrix: WL			
FieldSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL19	N	Nickel	40.0	3.1 J	3.1 J		UG/L	TR

Test Method: SW6020A	Extraction Method: TOTAL		Leach Method: NONE		Matrix: WL			
FieldSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL19	N	Arsenic	3.0	1.5 J	1.5 J		UG/L	TR

Test Method: SW8081B	Extraction Method: SW3520C		Leach Method: NONE		Matrix: WL			
FieldSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL19	N	p,p'-DDE	0.025	0.0072 J	0.0072 J		UG/L	TR

Test Method: SW8082A	Extraction Method: SW3520C		Leach Method: NONE		Matrix: WL			
FieldSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL19	N	PCB-1016 (Aroclor 1016)	0.50	0.50 U M	0.50 UJ		UG/L	I
DCL LEACHATE_FAL19	N	PCB-1221 (Aroclor 1221)	0.50	0.50 U	0.50 UJ		UG/L	I
DCL LEACHATE_FAL19	N	PCB-1232 (Aroclor 1232)	0.50	0.50 U M	0.50 UJ		UG/L	I
DCL LEACHATE_FAL19	N	PCB-1242 (Aroclor 1242)	0.50	0.50 U M	0.50 UJ		UG/L	I
DCL LEACHATE_FAL19	N	PCB-1248 (Aroclor 1248)	0.50	0.50 U M	0.50 UJ		UG/L	I
DCL LEACHATE_FAL19	N	PCB-1254 (Aroclor 1254)	0.50	0.50 U M	0.50 UJ		UG/L	I
DCL LEACHATE_FAL19	N	PCB-1260 (Aroclor 1260)	0.50	0.50 U M	0.50 UJ		UG/L	I

Reason Code Definitions

Code	Definition
C	LCS Recovery
H2	Prep Hold Time
I	Surrogate recovery outside project limits.
M	MS Recovery
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

Facility:	Long Term Monitoring
Event:	KOMAN, Long Term Monitoring, DCL Leach 2019
Guidance Document:	Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018
Contract Laboratory:	Katahdin Analytical Services, Westbrook, ME
Field Contractor:	KOMAN Government Solutions, LLC, Marlborough, MA
Data Review Contractor:	Koman Government Solutions, LLC
SDG:	TM1332, Certified - 12/5/2019 by JenniferPrescott
QC Level:	2B
Project Manager:	Jim Ropp
Data Reviewer:	Laurie Ekes
Data Reviewer Title:	Senior Project Chemist
Date of Review Report:	December 09, 2019

Analytical Method/ Leach Method	Normal Water Samples	Field QC Water Samples
E624/NONE	1	1
E625/NONE	1	

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2018 to the extent possible. Where definitive guidance is not provided, data has been evaluated in a conservative manner using professional judgment. In cases where two qualifiers are listed as an action, such as 'J/UJ', the first qualifier applies to positive results, and the second to non-detect results.

Samples were collected by KOMAN Government Solutions, LLC, Marlborough, MA; analyses were performed by Katahdin Analytical Services, Westbrook, ME and were reported under sample delivery group (SDG) TM1332. Results have been evaluated electronically using electronic data deliverables (EDDs) provided by the laboratory. The laboratory data summary forms (hard copy) have been reviewed during this effort and compared to the automated review output. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative.

The following quality control elements were supported by the electronic deliverable and were evaluated during this review effort:

Blank - Negative
Lab Blank
LCS Recovery
LCS RPD
Prep Hold Time
Surrogate
Test Hold Time
Trip Blank

The following quality control elements were either not applicable to the deliverable, or were not supported by the electronic deliverable, and were therefore not included in the automated data review. Those elements required for the project were reviewed manually, as narrated in the Comment section below.

Ambient Blank
Calibration Blank
Calibration Blank - Negative
Continuing Calibration Verification
Ending Continuing Calibration Verification
Equipment Blank
Field Blank
Field Duplicate RPD
Field Triplicate RSD
Grinding Blank
Initial Calibration Verification
Interference Check Sample A
Interference Check Sample A - Negative
Interference Check Sample AB
Lab Replicate RPD
Laboratory Triplicate RSD
Low Level Calibration Verification

Material Blank
MS Recovery
MS RPD
Post Spike
Reference Material
Reference Material RPD

A representative sampling or ten percent of sample and QC results were manually evaluated for compliance with project specific requirements and consistency with hard copy results. The following summaries were generated during the evaluation of this data set and are included in this report as applicable.

Batch – The analytical batch report is reviewed for completeness and compliance with project specific requirements. Incomplete or non-compliant run sequences are identified and their impact on data quality are discussed in the narrative.

QC Outlier – Results exceeding the evaluation criteria are reviewed for compliance with project requirements and a minimum of ten percent of the non-compliant QC values reported electronically are verified for consistency with hard-copy values.

Qualified Results – Qualified results are evaluated for compliance with project requirements and ten percent of qualified results are verified for consistency with the QC Outliers.

Rejected Results – All rejected results are evaluated for compliance with project requirements. The reason for rejection of the data is verified against hard copy data.

Field Duplicates – Field duplicate comparison results are evaluated for compliance with project requirements and ten percent of values reported are verified for consistency with the hard-copy data.

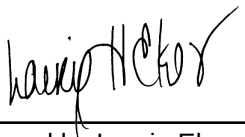
Data Submission Warnings – Warnings encountered during the data submission process are evaluated and their affect on data quality is discussed in the narrative below.

Analytical deficiencies, project non-compliance issues and inconsistencies with hard copy results observed during ADR evaluation process and their impact on data quality are summarized in the narrative below.

A total of 7 results (4.43%) out of the 158 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected. Trace values are not counted as qualified results in the above count. The qualified results are detailed in the following tables and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Comment
E624	The sample results for 624 are acceptable as reported.
E625	The sample results for 625 are acceptable as reported.



Reviewed by Laurie Ekes, Senior Project Chemist

December 09, 2019

Qualified Results

Test Method: E624	Extraction Method: METHOD		Leach Method: NONE		Matrix: WL			
FieldSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL19	N	1,1,2-Trichloroethane	5.0	5.0 U	5.0 UJ		UG/L	C
DCL LEACHATE_FAL19	N	1,2-Dibromo-3-chloropropane	5.0	5.0 U	5.0 UJ		UG/L	C
DCL LEACHATE_FAL19	N	cis-1,3-Dichloropropene	5.0	5.0 U	5.0 UJ		UG/L	C

Test Method: E624	Extraction Method: METHOD		Leach Method: NONE		Matrix: WQ			
FieldSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
TRIPBLANK_102319	TB	1,1,2-Trichloroethane	5.0	5.0 U	5.0 UJ		UG/L	C
TRIPBLANK_102319	TB	1,2-Dibromo-3-chloropropane	5.0	5.0 U	5.0 UJ		UG/L	C
TRIPBLANK_102319	TB	cis-1,3-Dichloropropene	5.0	5.0 U	5.0 UJ		UG/L	C

Test Method: E625	Extraction Method: METHOD		Leach Method: NONE		Matrix: WL			
FieldSample ID	Type	Analyte	RL	Lab Result	Qualified Result	Bias	Units	Reason
DCL LEACHATE_FAL19	N	bis(2-Ethylhexyl) phthalate	4.8	0.94 J	0.94 J	+	UG/L	Z/I/TR

Reason Code Definitions

Code	Definition
C	LCS Recovery
I	Surrogate recovery outside project limits.
TR	Trace Level Detect
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
J	Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.